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Some slight changes will be observed in the "make up" of this issue of the "Engineering and Mining Journal," which we believe will meet with the approval of its readers. The reading matter has been increased by four additional pages, which will be devoted principally to technical and practical articles on mining, metallurgical and engineering subjects by well-known authorities. These will be given the most prominent positions in the paper. The table of mining assessments and dividends, which has heretofore been published weekly but corrected monthly, will be printed in the first issue of each month, but the current assessments called and dividends declared or paid, will be reported as usual in each issue.

The town of Parral in the State of Chihuahua, Mexico, is attracting considerable attention by the mining developments which have been going on in that district during the last two years. The itinerary of the Mexican tour of the American Institute of Mining Engineers has been made to include a day's stop at this interesting place, and a brief description of the town and its environments are given in this issue. Nearly all of the mining development, except that done by the early Spaniards and some indifferent work carried on by a few foreigners in the early part of the last century, has been done since the first of January this year. There are now several quite extensive plants in operation.

Just as this issue of the "Journal" is going to press we have received the list of awards made in the Department of Mining and Metallurgy at the Pan-American Exposition. The list of medals awarded is published in the "late news" column, and in order to make room for it we have omitted this week the usual price current table. The prizes awarded in the Department of Mining and Metallurgy included 42 gold medals, 78 silver medals and 119 bronze medals. In addition to these there were 131 awards of "honorable mention" which are not published in our list because of lack of room. They are the more numerous, but as they are usually made to exhibitors in a collective exhibit, are of comparatively little importance.

A report comes from Siberia that American miners are to be prohibited from mining or prospecting on the eastern coast of Siberia, on their own account, or for others. This is altogether probable and is in line with the past policy of the Russian Government in relation to this region. There has been talk of an exodus from Nome to the Siberian coast, where very similar conditions are believed to exist. The Russian authorities—as we have heretofore said—do not want any communities of American miners in Siberia, with whom it might be difficult to deal, and will forbid their landing. While this regulation applies to working miners and prospectors, we do not understand that it is intended to prevent operations carried on by American capital under proper concessions, or the employment of American engineers by Russian companies.

The report of Engineers Edwin Duryea, Jr., and Joseph Mayer on the present condition of the New York and Brooklyn bridge is a strong indictment against the officials having charge of that structure. After a rather hurried inspection extending over a period of six weeks the engineers find that there are many evidences of gross neglect in the care of the bridge, and that there has been an entire lack of ordinarily intelligent supervision. Particular attention is called to the fact that when the breaks occurred in some of the suspenders in July last two had been broken for a long time and the breaks were not discovered until seven others gave way under the increased stress. It is found also that the weight upon the bridge during the "rush" hours of the day is about 18 per cent. in excess of the safety limit. The inspectors plainly state that the officials in charge of the bridge have been careless and neglectful in their supervision and maintenance of the structure. It seems hardly possible that men whose duty it is to care for a bridge over which hundreds of thousands of people are traveling daily should be guilty of such criminal neglect. Better care is taken of the hoist and haulage ropes in any well-regulated mine or quarry than has been exhibited in the administration of the Brooklyn bridge.

The British Iron Trade Association has just published its report of steel production in Great Britain for the first half of the current year, and its figures illustrate the present condition of the trade. The total output—2,422,883 tons of ingots—was 8 per cent. greater than that of the second half of the year 1900; but it was 9 per cent. less than that of the first half, with which it is fairly to be compared. In other words, there

was some recovery from the depression which marked the close of 1900, but an important decline from the activity of the earlier parts of that year.

A notable point is that the falling off has been entirely in bessemer steel; there was an actual, though small, increase in open-hearth metal, the output of which for the half-year was the largest ever recorded in a similar period. Over two-thirds—67.3 per cent.—of the steel was open-hearth, while only 32.7 per cent. was made in the converter. This shows that the tendency of the British steel-makers to a preference for the open-hearth furnace continues in a marked degree. The basic process makes little headway, however, and a little less than 16 per cent. of the metal made this year has been basic steel. It is possible that the decreasing imports of Spanish ores into Great Britain, and the growing disposition of British ironmasters to draw on the iron ore deposits in the north of Sweden and Norway—which are for the most part above the bessemer limit in phosphorus—may change this, and increase largely the use of the basic process.

The report of the Alaska Treadwell Gold Mining Company, an abstract of which is given on another page, shows that the great deposits of low-grade ore on Douglas Island continues to be worked at a wonderfully low cost and with profit to the stockholders. The company's huge stamp mills crushed in the year ending with May last 457,802 tons of ore, from which the average recovery was only $1.88 per ton. This is the lowest average yet recorded in any one year; but the working costs were only $1.05 per ton, and from the profit balance of 83c. a ton satisfactory dividends were paid. The average return showed a decrease from the previous year of 19c. a ton, while the quantity of ore crushed for various reasons fell off almost exactly 100,000 tons. This was not due to any deterioration in the mine, however, for there was a considerable increase during the year in the quantity of ore blocked out and fairly in sight.

We have, as usual, to commend this report as a model for the very full statements of operations which it contains. No stockholder can complain that he is unable to estimate the value of his holdings, since the report not only gives a full account of the condition of the property, but adds analyses of the working costs in minute detail. To mining men generally this makes the report of special interest and value, and it is to be hoped that other companies may follow the good example set by it.

Some fog continues to obscure the copper situation, but considerable confidence in the future is manifest. The general feeling appears to be that there is not going to be any cut in present prices. The action of the Amalgamated Copper Company in shutting down its Montana mines on Sundays is somewhat enigmatic, as it carries with it the idea of a reduction of one-seventh of the weekly production. It is not stated, however, that the smelters have also been ordered shut down on Sunday, and it is well known that the mines in six days can produce enough ore to keep the smelters in operation the entire week. The Sunday closing of both mines and smelters by the Amalgamated would eliminate a possible production of between thirty and thirty-five million pounds from the yearly output, but the closing of the mines alone will have little or no effect. The difference between the exports now and last year is at the rate of about 150,000,000 lbs. yearly. The European situation has somewhat improved. Demand has increased slightly, and prices have shown a small advance. It is believed that when foreign buyers become convinced that prices here are not going to be cut, they will order more liberally for future delivery. There is no copper in sight to supply export demand, except that in the hands of the Amalgamated Company.

Lead is in good demand, and steady in prices at about 4.35c. Spelter has also been in active demand, particularly for galvanizing purposes since the settlement of the steel strike. The market for sheet zinc is likewise in good condition. The iron and steel trade is exceptionally active, the demand for structural shapes and sheet steel being particularly noticeable. Some McKeesport mills are running on Sundays for the first time in their history. The general excellent condition among the other metals is something of a factor of strength in the copper market.

OFFICIAL MINERAL STATISTICS.

The United States Geological Survey has issued its annual chart showing the total mineral production of the United States. The report shows the amount and value of each mineral produced during the last ten years, with a resumé of the total value of the metallic and non-metallic products since 1880. According to this statement the total value of our mineral products in 1900 amounted to $1,070,108,889, a gain of almost exactly $100,000,000 over 1899, when the Survey reports gave the production at $971,900,894. The gain in 1900 over 1898 was a little more than 50 per cent. This enormous gain has been due, not so much to the increased activity in the mining world as to the enhanced values which have made the past two years notable ones in our history. Taking, for instance, the output of pig iron, which serves as a fairly accurate guide to industrial conditions. The production in 1900 was a little more than 2,000,000 long tons, or about 18 per cent., over that of 1898, whereas the value increased over 120 per cent. Copper is another example, the output in 1900 being about 15 per cent. in excess of that of 1898, while the value increased over 50 per cent. Zinc furnishes an exception, the value of this metal in 1900 being less in proportion to the production than it was two years before.

The largest value contributed by any one commodity in 1900 was that of coal, the combined output of anthracite and bituminous coal aggregating $306,891,364. The next in importance was pig iron with $259,944,000, followed by copper ($98,494,039), gold ($79,322,281), silver ($77,070,471 coining value), petroleum ($75,752,691), and building stone ($47,958,539). No other product contributed as much as $25,000,000, although both lead and natural gas came within $1,500,000 of that figure.

The growth of the United States as a mineral producer in the last twenty years is shown by the fact that the total value of the products in 1900 was three times that of 1880. It would be interesting to know what the increase has been during the last half of the last century, but there are, unfortunately, no records prior to 1880, except for a few commodities.

THE COMMERCIAL USES OF ALUMINUM.

At the recent meeting of the British Association an interesting discussion was brought on by a paper on the "Commercial Importance of Aluminum," read before the Engineering Section by Professor E. Wilson. In the paper, after a general discussion of the properties and the metallurgy of aluminum, special attention was given to two points, its use in the form of wire in electrical work, and its part in alloys with various other metals. The minor uses in the manufacture of cooking utensils and similar work were also referred to. The conclusion drawn was that the use of the metal is at present practically limited by the supply, and can be greatly extended.

The most important of the purposes to which the metal is at present applied, at least with reference to the future growth of the demand, is in electrical work. From time to time we have noted the use of aluminum conductors in electric plants, especially for the transmission of power. In this direction Professor Wilson took an especially hopeful view of the future. At present prices, making allowance for the respective weights of the metals, aluminum is cheaper than copper. Weight for weight the conductivity of aluminum is double that of copper; or for a given length of conductor carrying the same electric current with the same loss—that is, the same fall of potential—the relative weights would be as 2 of copper to 1 of aluminum. This involves a saving in transport, and the additional advantage that fewer and lighter poles are required for erecting overhead conductors. It has been urged against aluminum that it gives trouble in jointing. The ordinary metals were strongly electro-negative to aluminum, so that if other metals were used in joining, galvanic action would occur in the presence of moisture. In power transmission mechanical joints have been made with success; but, with proper precaution, aluminum wire can be welded either by the use of the blow-lamp or electricity.

Some of the engineers who discussed the paper were inclined to take a less hopeful view than Professor Wilson. Thus Sir W. Preece laid considerable stress on the present difficulty of procuring aluminum wire of uniform texture, and thought that for long-distance telegraph lines its success was still doubtful; though the heavier wire used for power transmission had given better results. This seemed to be the general consensus of opinion among the engineers who spoke, who also said that the aluminum wires had not succeeded thus far in withstanding wind pressures, snow and other contingencies as well as those of iron and steel. On this point, however, as on some others, opinion is not yet fully defined, and further experience is needed.

Especial stress is laid on this question of the use of aluminum in electrical work, for it is in that direction that the possibilities of extended use seem to lie. Its usefulness for many minor manufactures and in a wide range of alloys are well established already; and in the latter respect may be extended by further investigations.

It must be said, however, that aluminum cannot be looked upon as a serious competitor of copper until its production is considerably increased. The present supply is insufficient, and engineers cannot be expected to take too seriously into account a material unless they are assured that they can obtain such quantities as they need at the time they need them. When this point is settled, there are large possibilities in the future uses of aluminum on the lines above referred to.

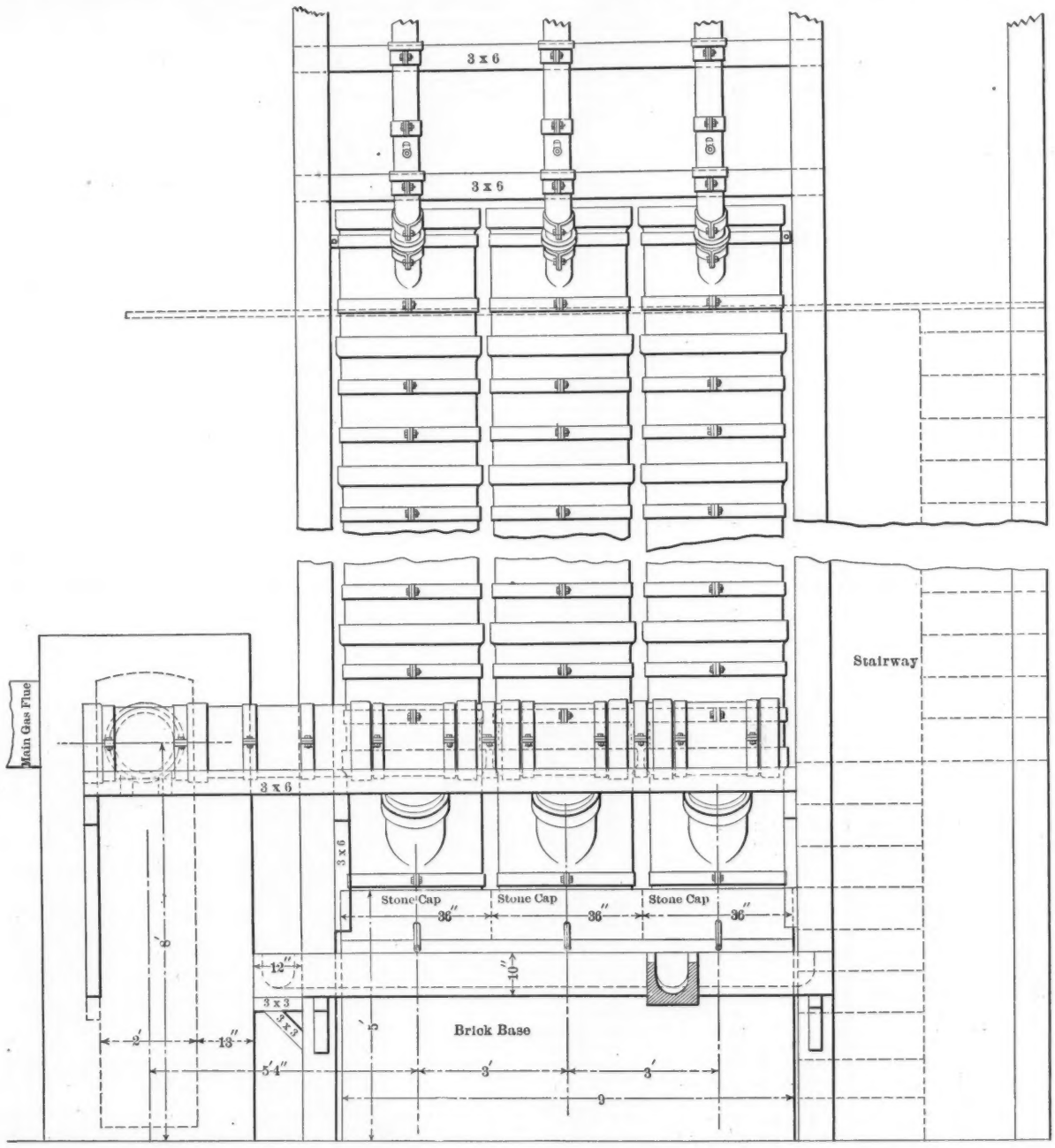
TOWERS FOR CONDENSING NOXIOUS GASES.

By Joel G. Clemmer.

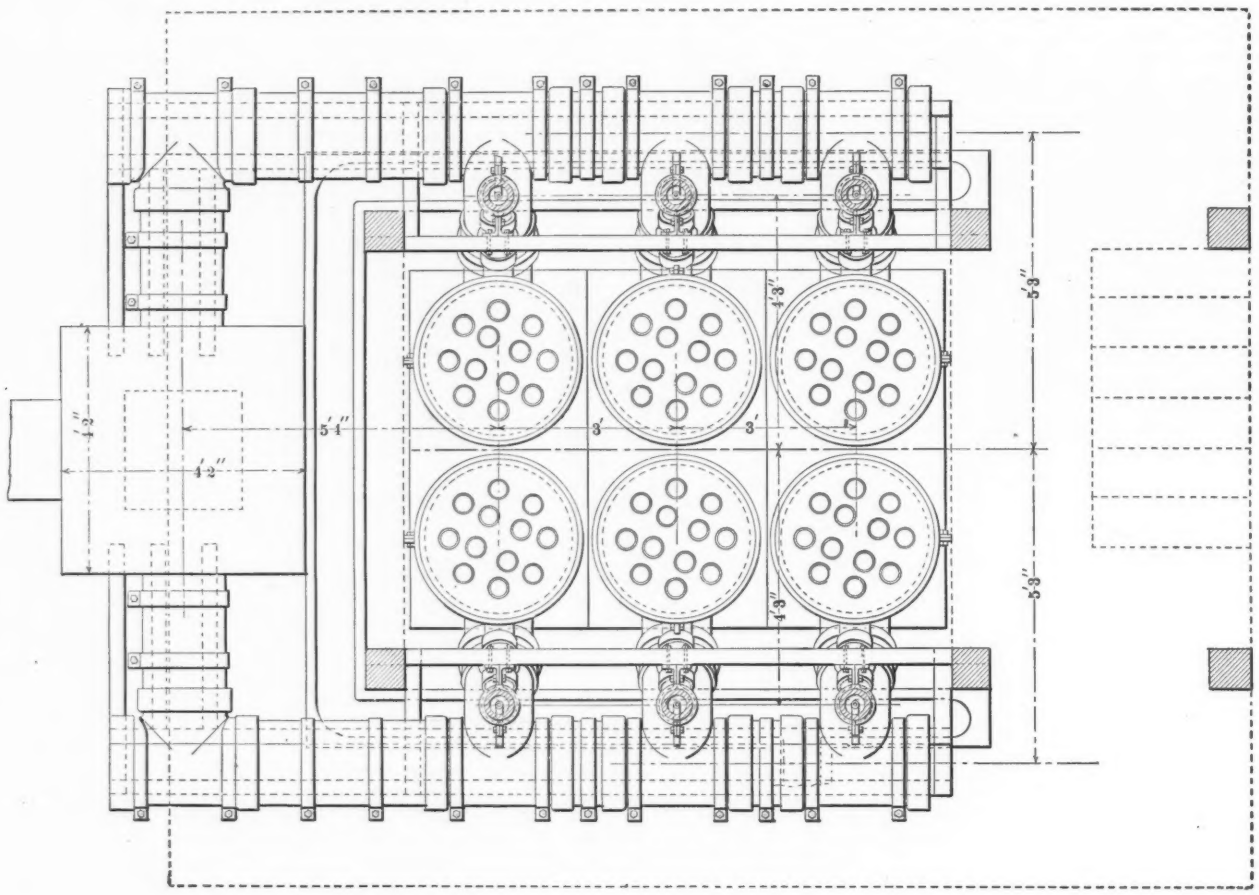
Solomon is given the credit of saying "that there is nothing new under the sun." No claim therefore is made whatever that the condensing towers herewith illustrated are a new invention. Nor is it the intention to go into elaborate details covering the condensing of gases, nor to discuss the various methods, whether obsolete or now in use by plants requiring towers for condensing noxious gases. Those requiring such information, and greater details, etc., are referred to "Lunge's Sulphuric Acid and Alkali," Vol. II. But it is the desire of the writer to call attention to the fact that it has been found, by at least one large acid manufacturer, that one pair (the illustrations show 3 pair) of condensing towers such as illustrated herewith will, with proper management, condense as much gas as one brick or stone condenser whose cross section measures 6 feet by 6 feet, or, in other words, the condensers illustrated herewith will condense as much gas as three of the usual brick or stone towers now generally used.

Without entering upon figures, a brief comparison of the tile (sewer) pipe towers, packed with coke, as compared with brick or stone towers, would be about as follows: It is reasonable to assume that the cost of constructing one pair of tile condensers such as illustrated is considerably less than the cost of the usual brick or stone towers. While the illustrations show the towers, supports, etc., constructed in a very substantial manner, it is obvious that they could be constructed, with perhaps not so much convenience in ascending to their tops, but at much less expense. For example, they could be built upon crib work of old timber or old railroad ties; the supporting timbers could be curtailed, and the stairway might be replaced with ladders, thus making the first cost less. A little more expense in first cost, however, usually means less expense in the end. The pipe used are ordinary sewer pipe. While there is a difference in the clay from which the sewer pipe is manufactured, and also a difference in the burning thereof, for withstanding the action of acid, any good run of tile pipe will serve the purpose.

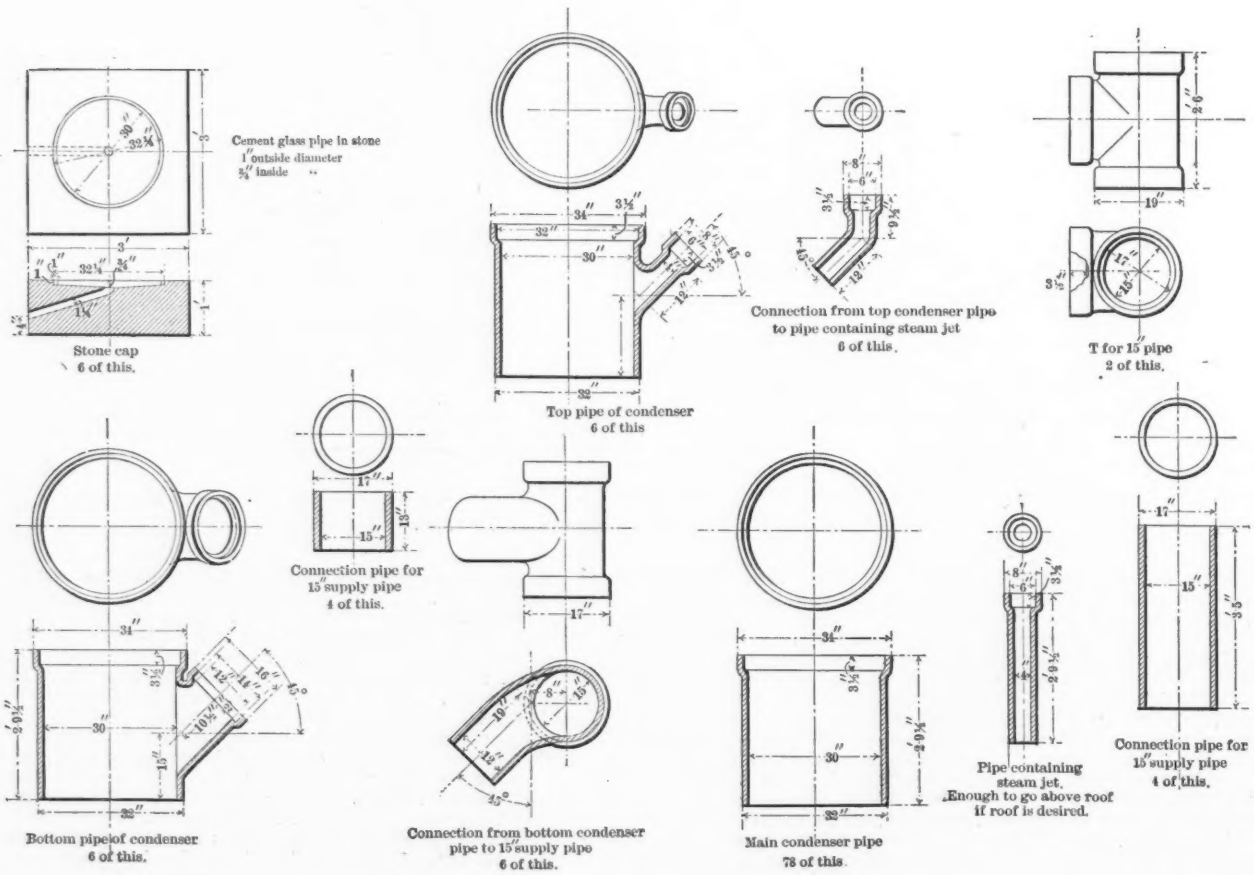
Care should be exercised in the selection of the stones for bases of the towers in accordance with the weight they are to sustain, and also for resisting the action of the condensed gases. For the latter purpose stones treated as described below have been found to give satisfactory results in practice. In the selection of the stones it has been found that a hard sandstone answers all requirements after treatment. Before treating the stones for resisting the action of the condensed gases, it is necessary to hollow out the center of the stone to provide a receptacle for the condensed gases and prevent their running out on the sides of the bottom tile. It is also necessary to drill a hole through the stone from the bottom of hollowed part for acid or condensed gases to flow through into a launder, and thence to the sewer, or to the storage tank if the acid is to be retained. The stones are dressed as above before resistant treatment, as after treatment the stone will be too hard to dress properly. Probably the best method for treating the stones is by placing them on a series of live return steam pipes, or flat coils, and after thoroughly heating the stones through, and while continuing the heating process until the operation is complete, apply soft tar as fast as it can be absorbed by the stones. In order to test whether the stones are sufficiently treated, prepare several large fragments of the same stones at the same time and in like manner. When the process is considered complete break the fragments to ascertain the depth of the absorbed soft tar. If the depth of absorption is from 3 to 4 in. it will be found ample. The treatment occupies several days to complete. It will of course be better to overtreat the stones with tar than to undertreat them. The tile pipe are shown in the accompanying illustrations bound in with iron straps or clamps. While it is true that sooner or later the heat from the gases will crack the pipes, it is not necessary to bind them



End View of Condensing Towers.



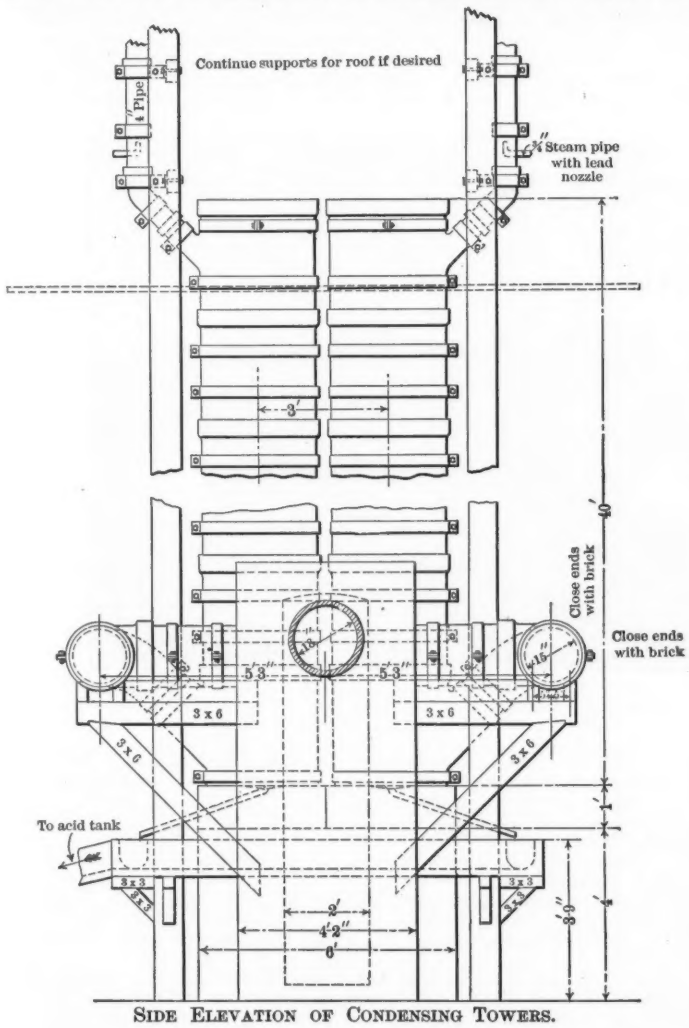
Plan of Towers for Condensing Noxious Gases.



Details of Construction of Condensing Towers.

at the start. It will be wise, however, to have some binders or clamps on hand in case of a bad parting of any of the pipes. Two clamps to a section of pipes will be found ample to bind same and make the pipe "as good as new" for the purpose. In putting on the clamps it is best to use several layers of roofing felt, well tarred with soft tar, between the clamps and the pipe all around; and also to have the clamp well tarred with soft tar. In case of crackage it is best to fill the crevice with a mixture, previously made, of China clay and soft tar, before clamping the pipe. This mixture should be about the consistency of putty. The towers should be filled with 72-hour coke, if coke is the packing material, and packed as each joint of pipe is put in place. The inside of the first section of pipe should be built up of chemical brick crib work, in order to sustain the subsequent packing of coke in the upper pipe sections. As each of the pipes should be packed as put in place, it is easy to have the towers properly packed. It has been found good practice to pack the joints between each pipe with one strand of asbestos rope, and on top of this a layer of black putty, composed of China clay and hot soft tar.

The tops of the towers are closed as shown in the illustration, and the gases prevented thereby from escaping at that point by inverted chemical ware cups sealed with the condensing waters. As the towers are of small diameter, the water for condensing the gases will readily distribute itself from the spigot, after striking the perforated tops, to the



SIDE ELEVATION OF CONDENSING TOWERS.

openings covered by the inverted cups. An oscillating trough may be used for a more perfect distribution of the water if desired. Such a trough is described and illustrated in "The Mining Industry," Vol. IX., page 279.

For draft, a steam jet controlled by a valve may be used in the outlet or draft pipes shown in the illustrations, or the draft pipes may be run down to the earth and connected to the chimney flues, with a damper between for control. Should any uncondensed gases escape from the tower through the draft pipes, when connected to the chimney, their area of influence to the surroundings of the plant will be much greater than if the draft pipes are led into the immediate atmosphere, and the draft is controlled by a steam jet; because by the latter method any escaping gases will be intimately mixed with the steam and be dissipated, or at least the gases escaping cannot travel any distance owing to their increased gravity.

In condensing capacity, the tile pipe towers have a great advantage over brick or stone towers, owing to their thin walls, consequently they cannot and do not retain the heat of the gases from the furnaces, nor retard their chemical union with the condensing waters, as is the case within the thick walls of the brick or stone towers. This is more particularly the case within the brick towers. A little exhaust or live steam mixed with the gases as they enter the towers of any description will thoroughly moisten the gases, and thereby increase the condensing capacity, no matter what kind of tower is used.

The usual towers of 6 ft. by 6 ft. in cross section, owing to the manner in which they are built, and their heavy weight, are apt to get out of plumb, and thus curtail their usefulness, as the water cannot travel the entire section area downward; and at their best, it is an open question, at any time, whether the full sections of towers 6 ft. by 6 ft. are traversed by the water, as the latter will, to a more or less extent, travel downward through the packing in "water cut channels" in such towers. It seems reasonable that towers of smaller sectional dimensions will be less liable to these defects or faults, and are, in reality, more efficient. They consequently have greater capacity per sectional area than the 6 ft. by 6 ft. towers. Should the tile pipe towers get out of plumb they can be readily straightened.

Tile pipe towers, with perforated tile plates, etc., placed horizontally, and equidistant apart throughout the height of the towers, are unreliable, because it is very difficult to keep the plates level. If they are not kept level the water will run down the sides of the pipes, instead of through the plate openings, and will not render any account of itself further than weakening the acid already condensed. These towers have a further disadvantage compared with towers packed with coke, and that is: The water, in falling in drops from, or through, one horizontal perforated tile to the next succeeding tile plate below, practically does no condensing, as it has not the time to do it in. In the slower traveling of the water over pieces of coke, the water spreads into thin sheets over the surface of the coke, and is then in good shape for condensing the gases.

The purpose of the towers herewith illustrated is for condensing noxious gases and not for making strong acids. I would state, however, that a slight modification of these towers will produce the strongest commercial hydrochloric acid demanded by, or supplied to, the trade.

STEEL PRODUCTION IN GREAT BRITAIN.

The British Iron Trade Association has collected and published statistics showing the production of steel ingots of all kinds in Great Britain during the first half of the year 1901. These figures, as given below, show a considerable falling off from the output for the first half of 1900; though there was some recovery from the depression which marked the second half of that year. The total production for the half-year, compared with that for the first half of 1900, is shown in the following table, in long tons:

	1900.		1901.		Changes.
	Tons.	Per ct.	Tons.	Per ct.	Tons.
Open-hearth	1,624,823	61.0	1,630,958	67.3	I. 6,135
Bessemer	1,038,279	39.0	791,925	32.7	D. 246,354
Totals	2,663,102	100.0	2,422,883	100.0	D. 240,219

The increase in open-hearth steel was 0.4 per cent., and the decrease in bessemer 23.7 per cent.; the total decrease in production amounting to 9.0 per cent., as compared with the first half of last year. If we take the second half of 1900, however, the comparison is different. In that period the production reported was 1,531,227 tons of open-hearth steel ingots and 706,725 tons of bessemer ingots, a total of 2,237,952 tons. The first half of the current year therefore shows an increase over the second half of last year of 99,731 tons, or 6.5 per cent., in open-hearth steel; of 85,200 tons, or 12.1 per cent., in bessemer ingots; and of 184,931 tons, or 8.2 per cent., in the total output.

The division of the production of the present year according to processes used was as follows:

	Acid.		Basic.		Total.	
	Tons.	Per ct.	Tons.	Per ct.	Tons.	Per ct.
Open-hearth	1,473,996	60.8	156,962	6.5	1,630,958	67.3
Bessemer	564,857	23.3	227,068	9.4	791,925	32.7
Totals	2,038,853	84.1	384,030	15.9	2,422,883	100.0

The basic process continues to be of comparatively small importance in the British steel trade. It is in use chiefly in the Cleveland District, as might be expected from the fact that the greater part of the basic pig is made in that region.

The make of finished open-hearth steel in the first half of 1901 was mainly plates and angles for shipbuilding purposes, followed in point of extent by blooms and billets and bars; but the information supplied by certain manufacturers has not been sufficiently exact to enable the full quantities of each to be tabulated.

The chief use of bessemer steel is in the manufacture of rails, and this output shows an actual increase, notwithstanding the falling off in ingots. The total make of bessemer steel rails reported in the first half of 1901 was 398,575 tons, against 381,149 tons in the first half of 1900, and 378,695 tons in the second half; the increases shown being 17,426 tons, or 4.6 per cent., and 19,880 tons, or 5.2 per cent., respectively. In the first half of this year about 55 per cent. of the total production of bessemer steel was marketed in the form of rails.

MINERALS IN PERSIA.—There are numerous large petroleum fields in Persia, not one of which is worked to any extent, much less in a systematic way, says a consular report. The petroleum fields in the provinces of Mazanderan, Gilan, Chamsee, Kerman, Luristan and Arabistan are hardly touched, and render no profits worth mentioning. At present nearly all the petroleum consumed in Asia and Africa (particularly in Japan, China, India and Egypt) is furnished by the wells of Baku and Pennsylvania. Persian petroleum, with less costs for freight, could doubtless compete successfully in near-by countries.

The rich Persian coal veins are not properly appreciated. They cover wide regions and are worked in a very primitive way. There can be no doubt that if shafts were driven into the veins and water pumped out, quantities of good coal could be brought to the surface. The Persians dig unsupported shafts, not more than 20 or 30 ft. deep, and abandon them as soon as water makes the work difficult, reopening the vein at another spot. Only the surface coal is utilized.

Copper, argentiferous lead, iron ore, arsenic, sulphur, cobalt, antimony, borax, tin and other minerals are also found in large quantities in the Persian mountain districts. All these resources are undeveloped, as Persia possesses no transportation facilities.

HIDALGO DEL PARRAL, CHIHUAHUA, MEXICO.

Special Correspondence.

Hidalgo del Parral, better known as Parral, is one of the oldest mining districts in the Republic, having first been worked by the Spaniards in the early part of the sixteenth century. Records of the old time workings, and the primitive methods of treating the ore, still remain, and resemble very closely the history of Pachuca, Guanajuato, Zacatecas and other important mining centers of the Republic.

The camp and its surrounding territory were only indifferently worked in the early days and did not amount to much until a few foreigners came, in the early part of the past century, and opened the different properties. The real value of the properties was not realized until the advent of the Mexican Central Railroad, about two years ago, as previous to that they had been worked under great disadvantage.

Parral district proper comprises an area about 8 miles wide by 25 miles long, and includes Parral, Santa Barbara and Minas Nuevas districts. The total population is about 30,000.

With the advent of the railroad and the accompanying facilities for handling the output, many large bodies of excellent pay ore were opened, and foreign capital and energy lost no time in taking advantage of the situation.

The general formation of the Parral and Minas Nuevas districts is porphyry; while in Santa Barbara it is slate and shale. The veins are generally strong and regular in both strike and dip. The greatest depth so far attained is about 1,000 ft., and that in but one instance—the Verde, which shows a stronger vein in the bottom and better values than existed at any of the other levels.

Hidalgo del Parral, Chihuahua, Mexico.

The character of the ore in the Minas Nuevas and Parral districts is silicious, carrying practically no lead, while the Santa Barbara district carries from 10 to 20 per cent. lead in a quartz gangue.

There are in the Parral District three leaching plants, one amalgamating plant and one leaching plant under construction, which, when completed, will make the camp's mill output 475 tons daily. Beside these there are three mills in Santa Barbara of 450 tons output, with another 400-ton mill under construction. Besides these there are about six private mills in the camp, all in full operation. A smelter is being added to this list of reduction works. At the present time about 330 tons are exported to outside smelters daily.

From January 1st to August 1st of the present year titles were granted to 180 claims, covering 3,275 pertinencias—8,188 acres—which is a small fraction of the mining acreage actually located.

Among the largest operators in the camp is the Hidalgo Mining Company, a Pittsburg company, which operates two mills and a narrow-gauge railroad 75 kilometers in length. The road runs to the heavy timber in the Sierra Madre Mountains, and, with the completion of a sawmill now under construction, mining in the entire camp will be greatly benefited. This company is now operating six mines and two mills, and producing some of the best ore in the camp, all of which is treated in its own mills. The output is over 4,000 tons per month.

An English syndicate, styled the Parral Mines, Limited, purchased in the latter part of last year a group of mines from the former owner, the Parral Mining and Milling Company, and immediately commenced development. Their success has been phenomenal, and the company is spending a large amount of money in development, and the mine is rapidly being put into shape to be one of the heaviest producers of the camp. A 40-H. P. compressor is being put in place and will be working by the first of the year.

R. S. Towne, president of the Compania Metalurgica Mexicano, realizing the great future of the camp, about a year ago invested heavily in the Santa Barbara District, where he has erected a 400-ton concentrating mill, which is now running on full capacity. He also has the erection of a smelter in contemplation. With the present plant the company is able to treat the output of its different mines in the district. A narrow-gauge railroad is employed to transfer the ore from the mines to the mill. The company is employing over 1,600 men.

The Guggenheim Exploration Company at the same time took advantage of the situation and invested in the same district. The company has since opened up one of the largest veins of ore in the section, as a result of which a contract has been let for the construction of a 400-ton mill. The original purchase included a 100-ton mill, but its capacity was soon exceeded.

Just before the first of the present year, a company composed of expert mining men, with Mexican and American capital, purchased the Germania Mine at $300,000 and at once commenced extensive development.

After this came the purchase of several properties by the Compania de Coahuilense, a company composed of Eastern and Mexican capitalists. This company has expended a large amount of money in development, and has opened up some of the largest veins in the Santa Barbara District. They are locally represented by W. A. G. Olshausen, who recently arrived from the East to take charge of the different properties.

Mr. D. M. Evans, representing a large American syndicate, arrived in the camp in the early part of May of the present year, and after looking over the land, purchased the San Vicente y Capuzalla, the Los Remedios and the "El Mopal." These properties were purchased by three different companies: (1) The Bevis Mining Company, composed of St. Louis capitalists, with Alfred Bevis as president, and a capital stock of $1,000,000 gold. This company is now blocking out ore to the 500-ft. level, and expects to erect a 100-ton mill in the early part of the year. (2) The San Vicente Company, headed by Hon. B. F. Hammett, of El Paso, Tex., as president, and capitalized at $500,000 gold. This company's property adjoins and is on the same vein as the famous Palmillo Mine, which has made its owner a millionaire in the past eight months. (3) The Mopal Company, capitalized as $1,000,000, and having for its president A. B. Urmston, of Hamburg, Scotland. English capital is interested in this property. It is the enterprise of such companies, combined with good local management, that is bringing Parral so prominently before the mining world.

One of the men to whom credit belongs for developing this interesting region is J. Harvie, who last year purchased the Esperanza, Trinidad, Aurora and the Sierra Madre. These properties are now figuring among Parral's principal producers.

Two of the oldest properties of the camp are the Jesus Maria and the Tajo, both being worked under lease and bond by the Meyer, Clarke Rowe Company, better known as the American Zinc Extraction Company.

Another of the old mines of the camp, and which had been worked in the early days by the Spaniards, is the Prieta. This is now being worked by the Prieta Gold and Silver Mining Company, of Baltimore, Md., under lease and bond.

The most famous mine of the camp is that of Pedro Alvarado, the Palmillo, which went into bonanza in October of last year and has been producing on an average of $150,000 monthly ever since, at an expense of not more than $25,000 per month.

The purchase of the San Cristobal, San Rafael and La Luz mines by Jas. F. Flynn, from Long Brothers and the Hidalgo Mining Company, was one of the most important deals of the year. All of the mines have been heavy producers, and at the present time are yielding a large tonnage of good ore. The La Luz is situated on the Palmillo veins, 100 meters north of the Palmillo workings. The other two are on parallel veins about 400 meters distant.

Parral is built on the old Spanish style, but within the past two years the advent of the foreign business man and the accompanying remodelling of the average business house has greatly improved the appearance of the town. The modern ideas of the city officials have also gone far toward making the town attractive.

AN INTERNATIONAL EXHIBITION IN JAPAN.—It has been decided by the Japanese Government that the fifth National Exhibition, to be held at Osaka in 1903, shall have an international character. The Department of Commerce and Agriculture at Tokio has therefore appointed as Exhibition Commissioners Mr. N. Kanzaki, who is manager of the Eikoku Shogyo Zasshi at the Japanese capital. Mr. Kanzaki is in the United States and will go to England to further the interests of the exhibition among manufacturers.

MINING IN LOWER CALIFORNIA.

By J. D. Lowry.

The Peninsula of Lower California, though discovered nearly 400 years ago, was until comparatively recent years one of the least known regions on the face of the globe. It was first visited in 1533 by an expedition sent out by Cortez, and the latter himself also visited the region in that year, both expeditions having anchored, it is supposed, in what is now the bay of La Paz, in the lower part of the Peninsula. After Cortez, several Spanish expeditions were sent to the Peninsula, and later on many English expeditions visited it, but they all landed on the dryest, hottest and most stormy coasts—those on the Gulf of California and elsewhere in the lower part of the Peninsula—and as a consequence the reports of the region that they spread abroad were anything but encouraging, and thus it was that the world in general obtained the idea that the whole Peninsula was barren and sterile. Then, too, the earliest missionary and colonization efforts were made in the lower half of the Peninsula, and little effort seems to have been made to gain knowledge of the northern half, which is the much richer of the two in natural resources, and is very similar in many respects to the lower part of our own State of California, except that it is more mountainous.

It was not until about the middle of the nineteenth century that systematic efforts were made toward the development of Lower California. Numerous colonization enterprises were organized in the United States and elsewhere, but through a lack of purpose and proper management most if not all of these were failures. Then, too, the stringent Mexican laws which formerly forbade Americans and all other foreigners to own real estate within 60 miles of the boundary line, and within 3 leagues from the seashore, also had a discouraging effect upon colonization efforts. This provision was repealed in December, 1883, however, when the Mexican Congress passed what is known as the "Colonization Law," which authorized the President of that Republic to make grants of public lands to companies on condition of survey and settlement, its object being to secure the disposal of the public lands to bona fide settlers and not to speculators; and thus one of the greatest barriers to the development of the Peninsula of Lower California was swept aside. Under this stimulus, renewed efforts were made to colonize the Peninsula, especially the northern part, and this time they were rewarded with success, as many Americans and others migrated to the region, and they have continued to do so in such numbers that the population is now about double what it was at that time. They are engaged in many farming, stock-raising and mining enterprises, and it is with the latter that we have to deal in this article.

The largest mining enterprise in the Peninsula is the Compania de Cobre del Boleo, of Santa Rosalia, a French concern, which has spent several millions of dollars in equipment, etc., and employs nearly 3,000 men, mostly Yaqui Indians, who receive about $1, Mexican, per day. The copper mines of this company are located near Santa Rosalia, in the municipality of Mulege, about 90 miles across the Gulf of California from Guaymas. Copper was first discovered in the spring of 1868 by Jose Rosa Billaviconico, a fruit packer, who was looking for a short trail to the port of Santa Maria. The mines, however, were not opened up until 1871. The copper deposits cover an area of 6 or 7 miles long, along the coast, by 3 or 4 miles wide, the entire strip being an elevated plain rising toward the interior. The plain is cut by numerous cañons and ravines, which empty into the gulf. The ore occurs in three beds with intervening rock, and the ore-beds and the whole country dip at a slight angle toward the shore of the gulf. The rock in which the ore is found is evidently of very recent origin, and overlies an underlying bed of trachyte of unknown depth. While the ore-beds extend over a very large territory, the valuable portions cover a comparatively limited area, and the pay ore occurs in shoots or chimneys in the beds, having a width of from 75 to 150 ft., and a general northwest and southeast course. The stratum carrying the ore is a soft ferruginous clay, mixed in many places with oxide of manganese, and in others intersected in every possible direction by small seams of gypsum. The foot-wall or floor of the different ore-beds is always a conglomerate, while the hanging-wall or roof is either clay or soapstone, or more generally a mixture of both, which readily crumbles when exposed to the air. The ores differ very widely in composition and appearance; in fact, a great many of the ores have not the characteristic appearance of ore at all, but look like yellow clay. True copper-ores varying from copper glance to green and blue carbonates do, however, occur. Malachite forms the bulk of the ore, and wad or cupriferous oxide of manganese occurs in the largest quantity. The thickness of the ore-beds varies from a mere seam to 3 ft. The property is equipped with a complete smelting plant and narrow-gauge railway system from the mines to the latter; also with a central electric power-station, which the General Electric Company put in in 1894, and this supplies power for running the hoists, pumps, blowers, etc.

The production of copper from these mines has been very steady for the last 13 or 14 years, as will be seen from the following: In 1886 the production was 10,042 metric tons; in 1896, 10,099 tons were produced, and in 1900 the production amounted to 10,503 tons.

Copper mining on a large scale has also been carried on near San Fernando, 70 miles south of San Quintin. The San Fernando group, which was worked some years ago by a French company, but which became flooded and consequently abandoned, was sold to Denver, Colo., men in the fall of 1899 for $175,000. The plans of the new owners included a smelter, which was to be erected at the mines, and which was to use oil from Los Angeles, Cal., as fuel. The smelter was not built, however, and in October, 1900, the group was sold to P. Burns, of Canada, W. R. Ramsdale, of Helena, Mont., and others. The deepest workings in this group are 500 ft., and the ore is said to run from 25 to 40 per cent. copper.

In September, 1900, Benton, Ramsdale and Stevens, representing Montana parties, deposited $75,000 in silver with the Minister of Mines for the Northern District of Lower California, and filed denouncements for nearly 4,000 claims to copper mines. The denouncements began as far south as San Fernando, where the greatest number of claims were located, and ran through the known copper belt as far north as San Ysidro, each claim being 40 meters square.

Gold mining is carried on in many parts of the Peninsula. At Calmalli, near the Gulf Coast, the Ybarra Gold Mining Company of Calmalli, and San Francisco, Cal., owns and operates some of the richest mines on the Peninsula. The greatest amount of development work has been done on the Otilia Mine, which has two shafts—one vertical and one inclined—the former being about 500 ft. deep and the latter about 700 ft. deep. The shafts are 500 ft. apart, and the underground workings have a lateral extent of 2 or 3 miles. The property is equipped with a 20-stamp mill and concentrators, which are run by steam-power. The veins occur in slate, and the mineral belt is from 1½ to 2 miles wide, and about 15 miles long. The company employs from 200 to 300 men.

At Jacalitas, 50 miles from Ensenada, and about 100 miles from San Diego, Cal., the Trinidad Mining and Milling Company owns and operates the Piedad and Alemana mines, the latter of which is equipped with a stamp-mill and hoist. At the Cristo Mine, near Jacalitas, a 4½-ft. vein of ore was opened up some years ago.

At Agua Dulce, in the Saragossa District, 60 miles east of Ensenada, the Fortuna, Tesoro, Guadalupe, and other properties formerly owned and operated by La Fortuna Gold Mining Company, are now owned by I. I. Irwin, of San Diego, Cal., he having bought them in July, 1900. La Fortuna Company spent over $100,000 in equipment, etc., for these properties.

In La Huerta District, about 40 miles east of Ensenada, the Republica Gold Mine, formerly owned by La Republica Gold Mining Company, but now owned and operated by I. I. Irwin, of San Diego, Cal., he having bought it at the same time that he bought the properties of La Fortuna Company, was first equipped with two 5-stamp mills, but these were replaced by a 30-stamp mill in the early part of 1900. A cyanide plant was also put in. The property is also equipped with a saw-mill, which furnishes lumber to the several mining camps in the region as far as Alamo, 40 miles distant.

At Real del Castillo, 30 miles east of Ensenada, operations are under way on the Pueblo, Castillo and Guija mines, owned by Mr. D. Goldbaum. A mill was recently put in to treat the ores from these mines.

At Escondido, between San Antonia and Santa Clara ranch and about 35 miles southeast from Ensenada, considerable development has been done, the Dewey being one of the principal mines.

Considerable work has also been done at the Socorro, Buena Vista and Sierra Pintado placers, all within comparatively short distances from the districts mentioned. Several years ago three lumps of gold, each weighing about 50 oz., were sent to San Diego from the Socorro District.

The placers in the Juarez District, about 75 miles east from Ensenada, which were worked for many years by the Mexicans on a small scale, are now worked with modern hydraulic plants. The dirt is said to average about 75c. to the yard, and assays have run as high as $1.50 to the yard. In the latter part of 1898, M. Phillips, of San Bernardino County, California, bought an interest in one of the placers here on a valuation of $40,000 for the property. The latter is now equipped with a $12,000 hydraulic plant. In January, 1899, the Piramide Gold Mining Company secured a permit from the Mexican government to develop 570 acres of placer ground in this district. A $20,000 hydraulic plant was installed, and two 50-H. P. pumps were put in to pump water from a creek 3 miles away. One of the pumps forces the water through a 9-in. pipe over a hill for a mile, and from there the water is conveyed in ditches to a pipe-line, which carries it to the other pump.

Considerable work has also been done on Cedros Island, about 400 miles south of San Diego, and 50 miles off the coast. The island covers an area of 80 square miles, and lies due north and south. The mineral belt cuts it diagonally across from northwest to southeast, and is a half mile wide in some places. The ore is quartz, carrying copper, iron, and gold.

Operations were begun about 1889, but after a run of only about three years they were closed down until the fall of 1899, when T. R. Lombard, Sr., of San Diego, Cal., bought out the interest of O. G. Schulenburg, of St. Louis, Mo. amounting to 51 per cent. of the capital stock. An expert was sent down to examine the property, and his report was of such a favorable nature that operations were started up shortly afterward. He estimated that there were 80,000 tons of ore in sight, with ore averaging about $12.50 to the ton. Operations were closed down this spring, and nothing definite is known as to when they will be resumed.

In the spring of 1899, placer diggings were discovered at Santa Clara, 80 miles southwest of Calmalli, 15 miles north of Asuncion Bay, and about 400 miles south of San Diego, and as a result large numbers of prospectors and others from the United States and Mexico rushed to the new diggings, called by the Mexicans Cerro Pinto, or Painted Hill, from the fact that the principal workings were upon and around a mountain of that name. Pay was found from 6 in. to 3 ft. beneath the surface, and in all directions from Cerro Pinto the Mexicans took out from $4 to $20 to the man per day with dry-washing machines. Water at the diggings was scarce, selling at $1 per barrel, although it was obtainable in large quantities at a distance of 20 miles and in smaller quantities about 6 miles distant. A recording agent of the Mexican Government was sent to the diggings, and this was greatly appreciated by the gold-seekers. As a result of the excitement, the 200 men in the employ of the Ybarra Gold Mining Company, at Calmalli, left for the new district, necessitating the closing down of all operations at that point. Many and exaggerated were the tales that were received in this country regarding the new finds, and it was therefore extremely difficult to obtain any authentic information regarding them. The rush was of short duration, however, and returning prospectors said that the yield to the man had averaged only about $1.50 per day. The largest nugget found was worth about $35.

H. L. Swain, superintendent of the Ybarra Gold Mining Company, at Calmalli, and a representative of the San Diego Chamber of Commerce, in writing of the new diggings, said: "The placers cover 10 miles square, but the workings are confined to the dry river beds. Prospectors

are finding new fields, but their extent and richness seem limited. This will never be a rich placer country. Many are prospecting for quartz ledges, and some claim to have found veins carrying gold, but I have been unable to substantiate these statements."

Some of the principal gold mining operations in the peninsula have been carried on in the Alamo District, about 75 miles southeast from Ensenada. Gold was discovered in this district in 1889, and a big rush similar to that to the Santa Clara diggings, only larger, took place from all parts of the United States and Mexico, the greater number, however, being from California. To those first on the ground the region offered a rich field both for placer and quartz mining. In the case of the placers, of which there were and are a considerable extent in Alamo, they were of such richness in the early days of the camp that gold could often be picked up on the surface in good-sized nuggets in the vicinity of what is now the town, but, like the Santa Clara diggings just mentioned, the gold soon played out. Then, owing to a scarcity of water, placer mining was abandoned by white men, but Chinamen kept the field, and they are still there in considerable numbers, notwithstanding the fact that every bit of water that they use is carried a long distance to the diggings in buckets, etc. The ledges, too, were of extraordinary richness at the surface, specimens running anywhere from $10 to $5,000 in gold to the ton. Shafts were sunk, mills were erected, and Alamo in a short time became a busy and booming mining camp. At the present time, the ore rarely reaches $100 per ton, and averages but a small fraction of that amount.

The boom had a comparatively short existence, as at the end of a year and a half from the time it started it suddenly subsided, and great numbers left the camp. Notwithstanding this, considerable mining has been done since that time. The principal mines now being operated in the district are the Aurora, owned and operated by the Aurora Mining and Milling Company; the Moctezuma, owned and operated by Los Angeles, Cal., parties; the San David, owned and operated by the International Mining and Milling Company; the Avalina, west of the main camp of Alamo, and near the El Paso mill site at the base of Mount Tomaso, owned and operated by J. Guyette, of Alamo; the Viznaga, 3 or 4 mils west from Alamo, owned and operated by Hartzell & Davis, and the Texas, owned and operated by the Texas Mining and Milling Company, of Kansas City, Mo., in which Senator Cockrell of that State is interested. The Aurora, Moctezuma, San David and the Viznaga are each equipped with a 5-stamp mill, while the Avalina and the Texas are equipped with rotary mills, the latter with a Bryan.

In July, 1899, Messrs. Wiggins, Albright & Neal, of San Diego, Cal., erected a cyanide plant on the ruins of the Princessa mill, which burned down some years ago. The plant consists of three tailings or pulp vats of 41 tons capacity each, two solution tanks, two precipitating boxes, two regenerating or solution-strengthening tanks, and one alkaline wash tank. The tailings, vats and solution tanks are connected by pipes in such a way that two or all three of the former can be worked at the same time. Zinc shavings are used as the precipitating medium, and the solution has a strength of about 0.05 per cent. potassium cyanide. At first, caustic soda was used as a neutralizer, but after experimenting with lime the operators concluded that it would serve the purpose equally well and thus enable them to do away with the costly importation of the former.

The formation in the Alamo Region is very irregular, no regular or permanent ledge having been found up to the present time, although a depth of 400 ft., more or less, has been reached. As a result of violent dynamic forces the whole formation appears as a mass of faulted ledges cut by intrusive porphyritic and other dykes. Gash veins are also of frequent occurrence. The quartz is found principally between walls of granite and slate, although schists, sandstone, hornblende rock, etc., are also found. Ore of a reddish cast predominates, owing to the great prevalence of iron oxide. The ore is principally free milling, but considerable sulphurets, chiefly iron pyrites, are found associated with the gold. Galena is found frequently also.

From a climatic and scenic standpoint the location of Alamo is ideal. The plateau on which it stands, 4,500 ft. above sea-level, is 16 miles long and from 2 to 3 miles wide, walled in on every side by mountains. The plateau offers good facilities for farming and grazing, and there are a number of farms and ranches scattered over its eastern end.

Wages in the Alamo District range from $2 (Mexican) per day for muckers and ordinary laborers to $3.50 (Mexican) per day for miners, and these rates prevail throughout the Peninsula, except for Indian and peon labor, which is much cheaper.

The San Juan gold and silver mines, several hundred miles south of Yuma, Ariz., are owned by Moraga Bros., of Santa Barbara, Cal., J. A. Altamirano, of San Diego, Cal., and H. W. Schramm, of Burlington, Ia. The mines are located on the summit of San Juan Mountain, about 10 miles from the Gulf Coast, and they are connected with a 25-stamp mill at the latter point by a wire-rope tramway system, which was put in at a cost of $50,000. The ore from these mines runs from $13 to $14 in gold and about 40 oz. silver to the ton. Some years ago the owners worked about 132,000 tons of tailings at these mines by the leaching process. About 80 men are employed at the mines.

Silver mining has been carried on for many years near La Paz, on the Gulf Coast. The Triunfo silver mines are equipped with a 40-stamp mill and they employ about 1,000 men. All shafts are inclined, with an average depth on the incline of about 2,000 ft., although the vertical depth of the deepest shaft is only about 600 ft. The mines are equipped with a cable system for raising the ore to the surface.

The Progresso Silver Mining Company, also operating near Triunfo, employs about 800 men. The company recently introduced the cyanide process, and up to a short time ago was treating 300 tons of ore daily by that method.

While no iron mining of any extent has been carried on in the Peninsula, good deposits of that ore have been found near San Ysidro.

Sulphur is found in large quantities on the Gulf Coast, 20 miles above the mouth of the Rio Colorado. The deposits occur in a series of low hills which are thought to be part of an extinct crater. The ore is found in immense masses and is said to average over 80 per cent. sulphur. The deposits are owned by the International Company of Mexico.

The salt mines on Carmen Island, in the Gulf of California, and about 150 miles north of La Paz, which are owned and operated by the Carmen Island Salt Company, of San Francisco, Cal., are among the largest and most easily worked deposits in the world. Large deposits of salt have also been found near San Quintin, on the Pacific Coast, about 54 miles south of Ensenada. The deposits are owned by the International Company of Mexico, and the salt is said to be of as good a quality as that found on Carmen Island.

Indications of oil have been found at Cape Colnett, from 75 to 100 miles south of Ensenada, and as a result drilling operations have been in progress at that point for some time under Manager M. Bernstein.

Turquoise mining is now being carried on at Lajara, the operations of the Colorado Turquoise Company at that point being quite extensive. On May 15th last a specimen weighing 1,425 carats was found. It is said to be of almost perfect color and the largest turquoise ever found on the American Continent. Considerable excitement has been created by the new find, and claims are being located in all directions from Lajara.

Concerning the topographical and other characteristics of the Peninsula, while the southern half is for the most part a low, flat, sterile region, the northern half is, as has been stated, more mountainous, is better timbered and watered, and in nearly every way offers greater possibilities for development than the former. Regarding the mountain region of the northern half of the Peninsula, Col. D. K. Allen, land inspector for the International Company, says:

"This great mountain region lies about 100 miles southeast of Ensenada, 75 miles east of San Quentin, and from 30 to 35 miles west of the Gulf of California. The mountain, for there is really but one, is about 110 miles in length, and from 15 to 30 in width. The great range, of which San Pedro is the crown, is about 160 miles long and from 20 to 40 wide. The highest portion of the mountain on the west is 11,800 ft. above the sea, while the eastern portion, or that next to the gulf, rises to 12,800 ft., and is covered with good pine timber. The Palomas—three peaks at the extreme east—rise from 1,200 to 1,500 ft. still higher. These are perfectly white, though the cañons on the sides are filled with pine. The highest altitude reached by my party was 12,800 ft., at three different points. We visited every valley, climbed every mountain peak, followed every stream from its head to its point of union with streams that led to the sea. Water is abundant everywhere, and only has to be husbanded in order to furnish a great supply for all the lands on the north end of the Peninsula. These streams can be easily and cheaply dammed, and all of the pine can be put into them and floated down to the heads of the valleys. This can be done with the San Rafael, which is a large stream with five branches, draining nearly all of the north end of San Pedro; also with the San Domingo, which drains the western side of the mountain; the logs or timber can be taken out at the upper end of San Rafael Valley, near Colnett, or at the upper end of San Quintin Valley, near San Ramon. Either water route is perfectly feasible."

As to the climate of the Peninsula, Alexander S. Taylor, in his "Historical Summary of Lower California," says: "The climate of the country between the boundary and Magdalena Bay is one of the most delightful, salubrious and equable on the face of the globe, and if settled, this region would be among the most accessible and acceptable sanitariums in the world, and is admirably adapted to raising many of the fruits of the torrid zone, and all of those of the Mediterranean Basin, as well as all the vegetables and cereals of Alta California; and all agree that they are of much better quality than those raised above San Diego."

With the exception of 800,000 acres of land lying in the valley of the Colorado River, in the extreme northeastern part of the territory, belonging to Mr. G. Andrede, and of a small portion of land on the Gulf Coast belonging to Mr. J. B. Hale, all lands in the Peninsula north of the 28th degree of latitude not previously occupied were granted to the Mexican International Company of Hartford, Conn., by the Mexican Government on October 20th, 1886, and as a consequence settlers and others must deal with, buy, and take title from that company in acquiring unoccupied lands in that portion of the Peninsula. As to the discovery of minerals, etc., however, the ninth condition imposed by the Mexican Government in granting the concession mentioned reads as follows: "The title of the company being officially recognized as perfect, and its right to convey parts of its lands to others legal and complete, it remains only to add that when the company gives a deed the purchaser and holder enters into full, unencumbered and peaceable possession of the land, without question or reservation of any kind—with only this possible exception: If a discovery of precious metals should be made by a third person on his land, as gold, silver or other mineral, in the form of a lode or vein, the discoverer could, under Mexican laws, take up a claim in about the same form as in the United States, but before working it would have to give security that he would not disturb growing crops or interfere in any way with the rightful use of the surface of the ground; that he would not by his underground work imperil the surface nor disturb any habitation, or interfere in any other way with the peaceable enjoyment by the owner of all his rights in the lands. If the mineral discovered should be coal, marble or valuable stone, this belongs to the owner of the land."

SALT INDUSTRY OF CADIZ, SPAIN.—Consul Carroll at Cadiz reports that the shipments of salt from Cadiz in the first six months of 1901 amounted to 40,753 lasts, as compared with 26,889 lasts (1 last equivalent to about 4,740 lbs.) for the corresponding period in 1900. The increase in 1901 is attributed to the price having been reduced to meet foreign competition.

AMERICAN RAILS FOR SPAIN.—Consul Ridgely reports from Malaga, Spain, that a steamer which recently took a cargo of iron ore to the United States has just returned with a cargo of steel rails. The "Mining Review," published in that city, deplores the lack of steel works in Spain, that would render such imports unnecessary.

THE PAN-AMERICAN EXPOSITION AT BUFFALO.—XIV. THE MICHIGAN AND MINNESOTA EXHIBITS.

By Mrs. Harriet Connor Brown.

MICHIGAN.

Many of the States represented in the Mines Building at the Pan-American Exposition have a more or less notable array of copper ores, but not one of them presents an exhibit in that line that in any way approaches the unique display made by Michigan. No other locality in the world can boast an appreciable output of pure metallic copper in its native state, and hence only a Lake Superior district could make the display which Michigan has set up in a large upright case against a side wall of the Mines Building. Here is seen a rare collection of copper in some of its most attractive and most curious forms.

The exhibit, which is intended to exploit the mineral resources of only the upper peninsula of Michigan, includes, besides copper, a fine showing of iron ores, some sandstone, and a little coal. It was collected under the direction of Mr. James R. Dee, of Houghton, the Michigan Commissioner of Mines and Minerals, and has been in charge of Mr. Irving J. Shields, of Hancock, assisted by Mr. S. S. Lang, of Houghton.

In front of the tall case, which is the centerpiece of the exhibit, stands, by way of ornament, an artificial specimen about 3 ft. high, made of pieces of Michigan copper, calcite and quartz stuck together. Near it is an axe found in Ontonagon County. It has been accidentally placed against a sapling, which grew around it, forming a natural handle. Tacked up against the back of the case are photographic views of Michigan copper and iron mines, that give the sightseer a clearer idea of those districts than any amount of description would do.

In the front of the case is a collection of Indian relics made of copper that is interesting to the archaeologist, as showing that copper must have been mined in the Lake Superior region long before the discovery of that district by the zealous Jesuit fathers. These copper knives, axes and spears were discovered in old pits, which are numerous throughout the copper-bearing trap range. These pits, which average about 20 ft. in depth, are always found in the soft amygdaloid lodes. The ancient miners appear to have had a most primitive manner of extracting the copper. They heated the rocks by fire, disintegrated them by throwing on water, and pounded them with stone hammers until they freed the copper. Some of these hammers are shown in the exhibit, and they are all characterized by a groove around them which permitted them to be bound with a withe. Another reminder of the prehistoric miner comes in the shape of copper bowls fashioned after the form of a skull.

The glowing masses of copper arranged in the front of the case in the form of ingots, straw specimens, and souvenir spoons, make one of the brightest spots in the whole Mines Building. Here, too, are seen specimens of crystallized copper and native silver crystallizations. At no other place are native copper and native silver ever found together as they are in Michigan. The combination here is mechanical rather than chemical. A piece of copper is sometimes found which contains a band of native silver running through it or branching through it in delicate, fern-like scrolling. A small specimen of rare moss copper in the exhibit is worth about $50.

MAIN MICHIGAN EXHIBIT, MINES BUILDING, BUFFALO.

Besides copper, this central case contains some rare specimens of iron taken from the Marquette, Menominee and Gogebic ranges. Curious formations of magnetite, barite, calcite, limonite and hematite are shown. Iron ores in the interesting forms of grape, kidney and needle iron are seen at their best. Some needle iron ore taken from the Pabst Mine is said to be the finest ever exhibited.

One of the curios of the exhibit is a piece of mohawkite, a new mineral discovered by Dr. George A. Koenig, of the Michigan College of Mines, who has had the distinction of discovering thirteen new minerals. This particular one, of which the important constituents are copper, arsenic, nickel and cobalt, received its name from having been found in the Mohawk Mine.

The iron specimens shown in the exhibit were contributed mostly by the Michigan College of Mines, the copper specimens by individual residents of Houghton County. Among the latter might be mentioned Col. J. N. Cox, Mr. Robert L. Edwards, Mr. J. T. Reeder, Mr. Benjamin

Choynoeth, Mr. Silvert Oleson, Mr. J. H. Lathrop, Captain Richard Edwards, Mr. J. C. Shields, Mr. Fred Smith and Mr. Matt Haug, who furnished the copper souvenirs.

To illustrate the variety of iron ores in Michigan and the treatment accorded them, an exhibit is made of the characteristic iron ores from the Marquette, Menominee and Gogebic iron ranges. The ores are arranged on shelves in separate boxes, on each of which is pasted an analysis of the contents.

In the list of iron-producing States Michigan stands at the head, with Minnesota a close second and Alabama third. The total output of iron ore in the United States in 1899 was 20,655,865 long tons, of which all but 2,404,061 tons was produced in the Lake Superior region. As the world's annual output of iron ore is only about 60,000,000 tons annually, the great importance of the Michigan and Minnesota iron fields is easily seen.

Iron was first discovered in the Lake Superior region in 1844, near the present city of Negaunee, Marquette County, Michigan. It was not until 1856 that shipments of ore were made to any extent. Now there

Mass of Native Copper, Michigan Exhibit, Buffalo.

are twenty-two mines in operation on the Marquette Range, and they have produced a total of 59,592,793 tons of iron ore, or almost a third of the entire output of the Lake Superior region. All the old mining companies on this range have steadily increased their production from year to year. This Marquette Range, which is the oldest in mining operation, embraces the counties of Marquette and Baraga.

The Menominee Range, the largest of the Michigan iron ranges, is made up of Dickinson and Iron counties, Mich., and has one active mine in Florence, Wis. Twenty-seven mines were worked in 1900, producing in all 3,261,221 tons. The Menominee has furnished in the course of its history 34,015,979 tons, and is sure to produce a great deal more ore, as it has extensive outlying districts not yet opened up.

The Gogebic Range, embraced in the counties of Gogebic, Mich., and Iron, Wis., was the last discovered of the Michigan iron ranges. Its twenty-four active mines produced, in 1900, 2,875,295 tons, making an aggregate production for all the years of 31,216,635 tons.

Fully 95 per cent. of the whole output of these Lake Superior mines is red hematite. The Menominee and Gogebic ranges produce soft red hematite exclusively, but the Marquette Range ships both the hard and soft varieties of hematite, as well as magnetite and limonite. All kinds are well illustrated in the exhibit.

Copper ore is also shown as it comes from the mines. The veins of copper ore in this region are mostly small and undeveloped, the copper being generally found, as before stated, in the form of pure metallic copper. There are, however, two rock forms in which copper is found, one known as "amygdaloid" and the other as "conglomerate." The first is a metamorphosed trap in the upper part of which copper is found, the second a collection of pebbles held together by quartz, datholite, calcite and other minerals. Amygdaloids and conglomerates are each arranged in pockets to show the operation of a copper mill.

Specimens of ore were collected for illustration of the milling process from the Tamarack, Osceola, Quincy, Franklin, Franklin, Jr., Arcadian and Wolverine mines. The exhibit is indebted to Mr. William Kelly, mining engineer at the Vulcan mine, for the collection.

A piece of Michigan copper that attracts general attention is a huge lump on a pedestal at one side of the main entrance to the Mines Building, that was contributed by the Mass Consolidated Mining Company. It weighs 3,500 lbs., and was cut from a piece that weighed 8 tons. It is about 90 per cent. pure. It reminds the sightseer that in these wonderful copper mines of Michigan huge masses of copper are often found which weigh as much as 500 tons or more. These masses, which the miners have to cut with hammer and chisel, are not sent to the stamp mills, but go to the smelters, where they are cast into bars and ingots.

Probably the most prominent feature of the exhibit is a pile of copper ingots, bars, plates and cylinders, containing in all about 25 tons of copper. These are arranged in a symmetrical mass that towers noticeably above all the other features of the exhibit. It is the property of the Calumet and Hecla Company, which has the distinction of owning the deepest mine in the world, the celebrated "Red Jacket," which descends 4,900 ft. in the earth.

Copper mining in Michigan, in modern times, dates from 1844, the year when definite mining began at the Cliff Mine in Keweenaw County. The principal mines of the copper-bearing belt in Michigan are in Houghton County. About 150,000,000 lbs. of refined copper, worth nearly

Exhibit of Michigan Building Stones at Buffalo.

$25,000,000, were produced in the State last year. The total product since 1844 to the close of 1899 was no less than 2,521,378,296 lbs. Michigan was, for many years, first among the copper-producing States, but Montana has recently gone to the head of the list. Of the twenty-eight copper properties in active operation in Michigan last year, however, twenty had been started within the previous two years, so that Montana will do well to look carefully to her lately-won honors or they may be wrested from her.

Before closing this notice of Michigan's copper exhibit, mention should be made of the "Copper Handbook," by Horace J. Stevens, of Houghton; which is conspicuously displayed here as an appropriate authority.

Michigan also displays some fine samples of sandstone, the handsomest specimen of which is in an arch set up outside the Mines Building, where it commands the admiration of all passersby. It is exhibited by the L'Anse Brown Stone Company, of Chicago, whose quarries are at L'Anse, Mich. The Portage Entry Quarries Company exhibits from its quarries at Jacobsville some fine specimens of sandstone, notably the kind known as "Raindrop."

The influence of the Michigan College of Mines is apparent in this exhibit. It is interesting, therefore, to study the many views of that institution, which are framed and placed on exhibit in a central stand. This college, which is situated at Houghton, was only opened in 1886, but is already recognized as one of the leading institutions of the kind in the country. It seems destined to be a helpful factor in the further development of this region.

MINNESOTA.

No State and no nation is likely to compete, for any length of time, with Minnesota in the production of iron ore. It is second now to Michigan alone, and is likely any year to move ahead to the first place. Michigan has been producing iron ore for the past fifty years, but Minnesota's enormous output only began seventeen years ago. The visitor

to the Mines Building at the Pan-American Exposition suddenly realizes the vastness of this comparatively new industry, as his eye falls on a big red panel on the wall above the Minnesota exhibit, which bears the statement:

"Duluth Iron District.

"Ore shipments began from the Vermilion Range, 1884, 62,124 tons. Mesabi Range, 1892, 4,245 tons. Ore shipments from both ranges 1900, 10,000,000 tons. Last year's shipment in trains of 20-ton cars would reach from the Atlantic to the Pacific and from Canada to Mexico."

Minnesota's mining exhibit makes no pretense of exploiting any of the State's mineral resources except its iron ore and building stones, but they alone are enough to make an empire rich. Nearly $300,000,000 is at present invested in this ore-mining and ore-transportation business. Seventeen years ago not a ton of ore was mined in the State; there were no ore roads and no ore docks nor terminals. During last August the three railways which connect the Minnesota iron ranges with the markets of the world, hauled out 1,959,773 tons of ore, and for the season this year, up to August 31st, inclusive, they have shipped in all 7,145,766 tons. Thirty steel steamships for the ore trade have recently been constructed, at a cost of about $6,500,000. Work has been begun at one of the Minnesota ports which will cost in the neighborhood of $5,000,000. Several million dollars are also being invested in sinking new shafts, erecting shaft houses, and installing new pumping and hoisting machines.

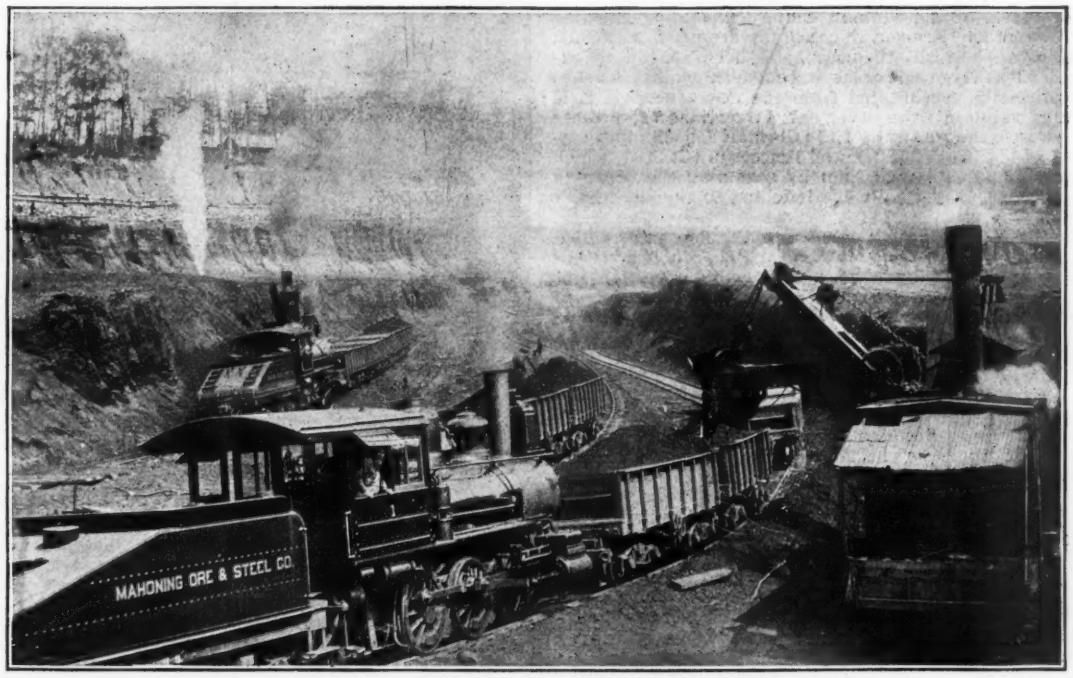
The exhibit which is intended to represent some of this commendable activity was collected and arranged under the direction of Capt. Alexander MacDougall, of Duluth, one of the best known of the Minnesota tons, and the Pioneer 450,794 tons. Since the first shipment in 1884, the five mines of the range have produced 15,191,180 tons of ore. From over two score mines the Mesabi Range has shipped 31,400,077 tons in the eight years since its discovery. It undoubtedly has the largest iron mines in the world, both in regard to their stores of ore and their yearly output.

The ore of both ranges is high grade, being twice as pure as the iron ores of Great Britain or the southern part of the United States. The Vermilion output is principally hard red hematite, while the Mesabi product is wholly the soft ores of the same class. The deposits seem to be almost inexhaustible, for ore bodies to the amount of at least 100,000,000 tons were opened and measured only last year, and explorations are still going on.

Far Minnesota is rich in stone quarries. Large deposits of granite, green sandstone, and limestone occur throughout the State. The owners of a few of these quarries have thought it desirable to be represented at the Pan-American Exposition.

Granite that is handsome and durable enouhg to compare favorably with any similar stone in the Union extends in a broad belt across the State. Some of it, noticeable for its high polish, is exhibited by the Duluth Monumental Works. The Light Granite Company exhibits some of the fine red and gray granite that is quarried at Ortonville in Big Stone County. The Red Wood Falls Stons Company is also an exhibitor of granite.

From the Kettle River quarries, operated by the Minnesota Sandstone Company of Minneapolis, come decorative cornices and street curbing made of their famous sandstone.



Iron Mining by Steam Shovel in Minnesota.

State Commissioners. A. P. Woods, of Duluth; Alexander MacDougall, Jr., of Duluth, and William White, of McKinley, have been successively in charge of the exhibit. It fills a pleasant space at one side of the Mines Building next to its old neighbor, Michigan, with whom it has so many kindred interests. On the ceiling above the exhibit is a large mural painting of the Biwabic Mine. A photograph of the same subject, with two pictures of the Mountain Iron Mine, fill all the limited wall space in the exhibit except that which is occupied by a map of the Mesabi Range made by A. P. Stillman & Company, mining engineers, of Hibbing, Minn.

A small pile of rough ore from the Chandler Mine at Ely, which runs 68.55 per cent. iron, is the central feature of the exhibit. The Chandler is one of the oldest and most important mines on the Vermilion Range, which, strange to say, was discovered before the Mesabi Range, although it is more distant from the lake. It was Charlemagne Tower who secured possession of the property in 1880, to whom is due the credit of having pushed forward its development. He spent millions in opening the mines and in building the Duluth and Iron Range Railway. The first ore was shipped from the site of the town of Tower in 1884. Later the road was extended 24 miles to Ely, and there the Chandler Mine was opened in 1888. Five large mines are now producing ore at Chandler.

Arranged in regular rows about the central pile of ore, are 48 large glass jars, containing sample ores of the Vermilion and Mesabi iron ranges. The Vermilion ores seem to show the better physical structure and to contain less moisture. They average about 67 per cent. iron and .030 per cent. phosphorus. The Mesabi ores show an average of 65 iron and .032 phosphorus.

Among the Mesabi ores exhibited are some from the following mines: the Fayal, Sauntry, Auburn, Alpina, Adams, Franklin, Sparta, Commodore, Spruce, Columbia, Genoa, Mountain Iron, Roberts, Biwabic, Duluth, Hale and Kananaw, Elba, Corsica, Mahoning, Penobscot, Hull, Rust, Sellers, Pillsbury, Clark and Chisholm.

Among the largest producers are the Mahoning, which produced 911,021 tons last year, the Biwabic with 924,868 tons, the Mountain Iron with 1,001,324 tons, and the Fayal with 1,252,504 tons. The Chandler, the most productive mine of the Vermilion Range, produced 644,801

Among the exhibitors of limestone are the Mortonville Stone Company, the Breen Stone Company, the C. W. Babcock Company, the Frontenac Stone Company, and the Biesanz Stone Company of Winona.

The State is rich in a handsome jasper quartzite, but R. H. Hinkly is the only exhibitor in that line.

Greiner & Corning, manufacturers of Chaska Cream-Colored Brick, display a few of their excellent wares.

The Cement Works of Austin, makers of brick, stone and cement, are represented by a few bricks of their manufacture.

Adolph Galasch, proprietor of the North Star Filtering Sand Company, of Red Wing, exhibits 12 bottles of sand. Some of it is natural sand as it comes out of the sand pit, and the rest is sand cleaned over No. 26 and No. 30 silk cloth.

Trap-rock, such as has proved of utility in macadamizing the roads of Duluth, also has a place in the exhibit.

On the whole, the exhibit of building stones is much less representative of the State's manifold resources in that line than is the excellent exhibit of iron ores. The latter has no match in any other exhibit, any more than have the iron ranges themselves an equal in any other State save Michigan.

DEMAND FOR AMERICAN COAL IN THE LEVANT.—United States Consul Ravndal, of Beirut, under date of August 1st, 1901, reports that the manager of the Beirut-Damascus Railway desires bids for 8,000 tons of American coal per year—60 per cent. in coal-dust briquettes and 40 per cent. in soft lump coal. It is important, he says, that the coal should not contain sulphur, and that, after combustion, it should leave as little ashes and cinders as possible. Bidders must forward analyses of the products of their mines, export prices, etc. Should success attend this experiment, continues the consul, an additional 12,000 or 15,000 tons could be disposed of in the open market, and considerable quantities might be sold for other ports; Port Said, for instance, receives a large amount of coal from England. Coal miners in the United States who are interested in the markets of the Levant should address their communications to H. Sabbag & Fils, Beirut, Syria. Ships bringing coal may expect full cargoes for their homeward journey.

THE POTASSIUM SALTS INDUSTRY OF GERMANY.

By E. Mackay-Heriot.

The discovery of natural potassium salts in large quantities in Germany has given rise to a new and flourishing industry. Fifty years ago these salts, which were only used in small quantities in the applied chemistry, have since obtained a fast footing in innumerable branches of the world's commerce, and especially as an artificial fertilizer. In these days when the products of farming are imported on a large scale the potassium, together with the phosphorus and nitrogen of the earth, is rapidly exhausted. These elements are necessary, and must be given back to the earth. Thus the natural potassium salts can be successfully used as a fertilizer.

Deposits of the above salts have only been found in paying quantities in Germany (with the exception of a small Tertiary occurrence in Kalusz, in Galicia). These discoveries have given rise to great speculation. At the end of 1899 about 180 companies had been formed to prospect for potassium salts; out of these about 20 have reached the stage of shaft sinking, and about the same number were putting potassium salts on the market, the latter including the Prussian and Anhalt State mines.

Mining Laws.—The mining laws in Germany concerning the ownership of salt properties vary in the different States. In old Prussia, he who first demonstrates a payable deposit to the Government inspector can claim a mining field of 2,189,000 sq. meters, and not only the rock salt (halite) but also the accompanying salts (in this case the potassium salts) belong to the claimant.

In Hanover the latter salts belong to the landowner; whereas in Brunswick and other States of the German Empire, including the free towns of Hamburg, Lübeck and Bremen they are Government monopoly.

Origin of Salt Deposits.—Several theories have been set up to explain the occurrence of these large salt areas, but modern geology teaches that the salts were orginally precipitated from the ocean water. It is very unlikely that they resulted from other salt formations after these had been dissolved, because the footwall of the German deposits has generally been found to be anhydrite ($CaSO_4$), and limestone ($CaCO_3$), which fact can hardly otherwise be explained than by assuming the ocean to be the source. One authority says: "We are indebted to the sea for all the salt water we have."

If we look close at the North German salt areas, the depths of which are sometimes several hundred meters, we come to the conclusion that one filling of a basin could not have been responsible for such immense layers, for if, as Ochsenius says[1], a sea-basin of 720 meters depth were to evaporate it would only precipitate 12 meters of salt. On this account the ocean cannot be taken as the direct origin. It is much more likely to have been an inland sea standing in intermediate or continual communication with the ocean. This sea would be either temporarily disconnected from the ocean by a bar, or the bar would let just enough salt water pass through which could be evaporated by the tropical heat of the then Upper Permian era.

In the first case the bar would be closed either by raising or sinking actions, or by heaping up of masses, such as sand. All these obstructions might in time be washed away, and thus permit a new filling of the sea-basin. This process could often be repeated. Ochsenius says[2]: "An inland sea, with a corresponding bar (which existed from the beginning or was built later on) a dry and sufficiently warm climate, and a surrounding country with a scarcity of pure water, and the conditions of all larger salt deposits are fulfilled."

The more insoluble carbonate and sulphate of calcium were first precipitated in the form of limestone and gypsum, then following the rock salt, and later on the more soluble potassium and magnesia salts.

Location of Boundaries.—The location of boundaries of the German salt areas has given rise to differences of opinion.

Ochsenius says[3] that the immense salt beds of North Germany could not otherwise have been deposited than on the bottom of a North German sea basin, whatever boundaries the latter may have had. Pasermann shares in the same idea[4] that this huge salt area belongs to one great basin. Another well-known authority classifies the German salt occurrences into four geological basins: The basins of Saxony, Hanover, Thüringen and Eichsfeld. The Saxony sea basin had as its shores the Paleozoic rocks of the Harz Mountains, and those of the Madgeburg district. The sea basin of Hanover includes the Grand Duchy of Mecklenburg-Schwerin, the Duchy of Brunswick and the political Province of Hanover. The shores of this basin are difficult to locate on account of great disturbances which they have undergone. The Thüringer basin had the Paleozoic rocks of the Thüringer Wald and elder rocks to the west as its shores. The Eichesfeld basin, which took up the district between the Harz Mountains and the Thüringer Wald, had the West Harz and the Thüringer Wald for its shores.

Types of Occurrences.—The North German salt deposits may be classified into two types as regards occurrence: The Stassfurt and the Hanover type. The Stassfurt type, which is marked by its regularity of occurrence has but one layer of potassium salts. The succession of geological strata is as follows: The lower new red sandstone (Lower Trias) is the hanging wall to the salt formation, then follow anhydrite, saltzthon (saliferous clay), potassium salts, rock salt, so-called "older rock salt." Sometimes a layer of younger rock salt is met with between the anhydrite and the new red sandstone. As examples of this type may be given the Stassfurt and the "Eichsfeld basin" occurrences. The Hanover type differs chiefly from the Stassfurt type in that in the former deposits several layers for nests of potassium salt are found, and often differing one from another as regards composition. The occurrences of the Hanover type are generally greatly distributed. This evidently accounts for the very rich deposits of sylvite which have been met with, for sylvite or chloride of potassium, which is a secondary salt is not unfrequently found in connection with clefts. Up to now the Hanover type of occurrences has been little prospected otherwise than by drill holes, therefore a perfect description of the same cannot yet be given. As examples of this type may be named the deposits near the towns of Hanover, Hildesheim, Kreiensen and many more.

All paying deposits of potassium salts in Germany have been found in the Upper Permian formation.

Rock Salt.—The rock salt of this formation varies greatly in pureness, color and structure. Sometimes it is mixed with anhydrite, kieserite, salzthon (saliferous clay), polyhalite, etc., and may be red, yellow, gray or transparent and glass like, it has also been found blue at Stassfurt. This blue color is said to come from carburetted hydrogen gas. Its structure is sometimes fine grained and sometimes coarse grained, seldom fibrous.

The fibrous rock salt is found in the "salzthon." The composition, color or structure of the rock salt give no indication of the occurrence of potassium salts in depths below. The rock salt, which occurs above the potassium salts is termed "younger rock salt," and the rock salt underlying the potassium salts is called "older rock salt." These terms hold good for deposits of the Stassfurt type, whereas in those of the Hanover type such a classification can seldom, if ever, be made.

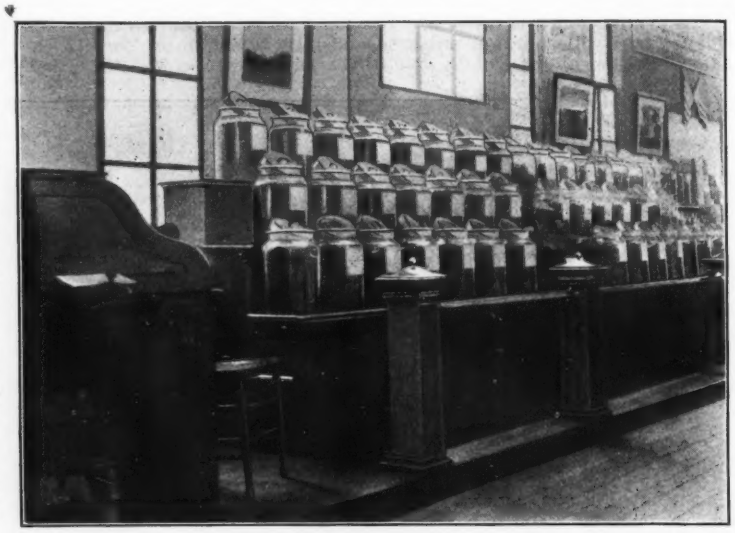
Anhydrite.—Like the rock salt the anhydrite varies in thickness from a fraction of a meter to 50 or more meters. It has a bluish color, and has sometimes a marble-like structure, but where partly altered to gypsum it becomes grayish. Its impurities are, as a rule, rock salt, salzthon and potassium salts. Anhydrite by altering to gypsum increases its volume. This fact must not be underrated as regards its ultimate effect upon a salt mine. For instance, the earthquakes which occurred in Mansfeld are said to have resulted from the above, and may be explained in short, as follows: The water which was pumped at the pump shaft had 15 per cent. or more of salt. Therefore, it is certain enough that the water had access to the salt formation which lies between the lake and the pump shaft. The salt formation was already proved by the shaft of a copper mine. Before the pumping at the shaft and lake began, this water served as a counterbalance to the hanging-wall, but as soon as it was pumped out the anhydrite, which had increased its volume, broke and fell into the washed-out cavities, and thus produced the earthquakes. It may also be said that a virgin salt field of the Stassfurt type is free from the danger of water, but the longer the field has been mined the greater is the danger from water. This theory is backed up by the Stassfurt mines. The flooding of the Anhalt and Prussian State mines at Stassfurt was evidently due to a sinking of the hanging wall, caused by long years of excavation underground. The sinking of the hanging-wall again caused fractures in the "salzthon," and this was a means of letting water into the salt formation. The water probably did not breach through the safety pillars, but entered the salt formation from above.

A very important factor for the future of a salt mine is the so-called "salzthon." This stratum is generally the direct hanging wall to the very soluble potassium salts, and on account of its waterproof properties has been a means of their preservation. "Salzthon," as its name denotes, is an argillaceous substance, containing variable quantities of rock and potassium salts and anhydrite. It is tough, and sometimes hard, but exposed to the atmosphere it disintegrates in a short time. Like anhydrite, the width of this layer varies greatly from a few centimeters to 30 meters or more.

The natural potassium and magnesia salts may be divided into two groups, as primary and as secondary salts. The most commercially important of the former are carnallite, kieserite and boracite; and those of the latter group, kainit, sylvine, sylvite and hartsalz. Carnallite (KCl, $MgCl_2$, 6 H_2O) is most common of all the potassium salts. It is used in the crude state as a fertilizer, and in the refined state as chloride of potassium, also as a fertilizer, or for the preparation of many commercially important salts. Kieserite ($MgSO_4$ H_2O) is used in the manufacture of bitter salt, and various other chemical preparations. Boracite $2(Mg_3B_8O_{15}) + MgCl_2$ is found in small quantities in potash salts. It has a yellowish color, and is used in the manufacture of borax.

Kainit (K_2SO_4, $MgSO_4$, $MgCl_2$, 6 H_2O) is a very valuable salt. It can be used in the crude state as a fertilizer. It contains a lower percentage

1. Ochsenius "Die Bildung der Steinsalzlager," p. 8.
2. Ochsenius "Die Bildung der Steinsalzlager," p. 43.
3. Ochsenius "Die Bildung der Steinsalzlager," p. 56.
4. Pasermann, "Die Kalindustrie," p. 13.



The Minnesota Exhibit in the Mines Building, Pan-American Exposition.

of chloride, and a higher percentage of potassium than carnallite. Kainit is of much less frequent occurrence than carnallite.

Sylvite (KCl), as its chemical formula shows, is a very valuable salt. It has been chiefly found in the Hanover type of occurrences, which have been, for the most part, exploited only by deep borings; thus the commercial importance of sylvite is not yet known. In some mines it has been found to occur in nests or pockets. Sylvinite, a composition of sylvite and rock salt, is used in the crude state as a fertilizer. It is, like kainit, a secondary product of carnallite.

A name often given to a certain class of potassium salts is "hartsalz." Hartsalz is a composition of rock salt, kieserite and sylvite. It is also used in the crude state as a fertilizer.

Many more mineral salts than are here given have been found in the German salt deposits, which are of little or no commercial importance. Mineralogical descriptions of the different salts are omitted from this article, as these may be found in various mineralogies.

Salts as Fertilizers.—Of special importance are the potassium salts in the refined state as fertilizers, because by concentrating the percentage of potassium, the salts are much more suitable for export. The following refined salts must here be mentioned: Chloride of potassium, potassium-magnesium sulphate, and sulphate of potash. The choice of these three salts depends on the nature of the plant for which the fertilizer is wanted. Potassium-magnesium sulphate could be used where chlorides ought to be more or less avoided. Should chlorides be avoided altogether, then sulphate of potash should be chosen.

From the crude potassium salts one main preparation is made, namely, chloride of potassium (KCl), which is also found in nature under the name of sylvite, and from this is manufactured many salts which play an important part in the chemical industry. Among the latter may here be mentioned: Saltpeter (KNO_3), prepared after the following formula: $Na\ NO_3 + KCl = NaCl + KNO_3$. It is used in the manufacture of gunpowder, for preserving meat, and for other purposes.

Carbonate of potassium (K_2CO_3) is made either from chloride of potassium or from sulphate of potash, by a similar process to that of Le Blanc. It has many uses, such as in the fabrication of green glass bottles, soap, etc.

Caustic potash (KOH) used to be manufactured in large quantities, but it has been of late largely supplanted by caustic soda. Caustic potash can be prepared by an electrolytic method. It is used in chemical laboratories, in coloring, and in making soap.

Chlorate of potash ($KClO_3$) is used in the fireworks industry for oxidation and in medicine.

Chromate of potash (K_2CrO_4) is prepared from chrome iron ore, carbonate of potassium and nitre.

Bichromate of potash can be prepared from chrome iron ore by the aid of lime, sulphuric acid and carbonate of potassium. Bichromate and chromate of potassium are used in the manufacture of chrome colors, in photography and in chemical laboratories.

Cyanide of potash (KCy) can be prepared by bringing ammonia into contact with glowing carbonate of potassium and coal powder. It is used in gold extraction and in gold and silver plating.

Permanganate of potash ($KMnO_4$) is used as an antiseptic and for oxidizing; potassium silicate as a safeguard against fire.

Magnesia Salts.—Of the crude magnesia salts, kieserite is the most important. It is first refined and then, for the most part, employed in the manufacture of better salt ($Mg\ SO_4 + {}^7H_2O$).

Chloride of magnesia ($Mg\ Cl_2$), which is obtained from the end solutions of the chloride of potassium fabrication, is used in the preparation of hydrochloric acid and in deep boring, when drilling in the salt formation.

Glauber's salt (Na_2SO_4) is prepared by the aid of sulphate of magnesia ($MgSO_4 + 7H_2O$) and chloride of sodium. It is used as a medicine, also in the manufacture of glass.

Chloride of lime, also a product of the Stassfurt potassium industry, is used for disinfecting, for bleaching, and for other chemical purposes.

As by-products of this industry may be mentioned bromine and rubidium salts.

ABSTRACTS OF OFFICIAL REPORTS.

Alaska Treadwell Gold Mining Company, Alaska.

The eleventh annual statement of this company for the year ending May 15th, 1901, shows the following exploration and development work completed during the year:

No. of level.	Drives, ft.	Cross-cuts, ft.	Raises, ft.	Total ft.
220	463	10	406	879
330	1,247	212	482	1,941
440	1,395	52	501	1,948
Totals,	3,105	274	1,389	4,678

As shown above, no development work was done on the 110-ft. levels last year. The drifting on the 220-ft. level was in the intermediates. Two raises were put through to the 110-ft. level and used for running ore down from the pits. In the 330-ft. level, No. 1 east drift reached the slate foot wall 320 ft. from the main cross-cut. The footwall here takes a sharp turn to the north. Over this drift and No. 1 west drift is a stope 360 ft. long and from 40 to 110 ft. wide, half-way up to the 220-ft. level. The ore in the east drift shows an average assay of $5.90 and that of the west drift $6.04. No 5 east drift on the same level has driven 386 ft. from the main cross-cut. The ore in this drift is found to be lower grade than that of No. 5 east drift in the 440-ft. level just below it. Nine raises have been made in this drift. East drift No. 1 in the 440-ft. level did not develop any pay ore and work has been stopped. East drift No. 4 in this level ran into slate 300 ft. from the main cross-cut. A raise to the upper level is up 235 ft., where underhand stoping has been started. The average assay from this drift is $2.19, and from the intermediate drift $5.20. East drift No. 5 has reached 521 ft. from the main cross-cut. The average assay from the last 150 ft. was $5.30.

No shaft sinking was done during the year. No. 2 shaft will be sunk to the next level during this year.

Exclusive of pits the total development in the mine to May 15th, 1901, has been as follows: Drives, 10,907 ft.; cross-cuts, 3,534 ft.; raises, 4,017½ ft.; shafts, 778 ft.; total, 19,236½ ft.

The amount of ore mined and sent to the mill from the several levels during the year was as follows: Adit and 110-ft. levels, 218,490 tons; 220-ft. level, 176,902 tons; 330-ft. level, 44,059 tons; 440-ft. level, 18,351 tons; total, 457,802 tons. This ore was mined and placed in the mill bins at a total cost of $321,996. At the date of previous report (May 15th, 1900) there were estimated to be 125,000 tons of broken ore in the mine. This year the amount of ore in the mine was 339,290 tons, an addition for this year of 214,290 tons. The cost of tramming, hoisting and hauling to mill was about 20c. per ton, which on 457,802 tons amounts to $91,560. Deducting this from the total cost leaves $230,435 as the cost of breaking 672,092 tons of ore, or 34.29c. per ton. Adding the 20c. cost for delivery to mill the total cost per ton, including development, has been 54.29c. The estimated amount of ore in sight and available for the mill on May 15th, 1901, was 3,917,589 short tons. The secretary's balance sheet on May 31st, 1901, was as follows:

Capital and Liabilities.

Capital stock—200,000 shares of $25 each		$5,000,000
Sundry creditors		127,907
Loan account—D. O. Mills, at 6 per cent		25,000
Surplus carried over from the year 1900	$604,678	
Net profit for the year	352,559	
	957,237	
Less dividends 45, 46, 47 and 48 paid during the year	300,000	
Surplus carried over		657,237
		$5,810,144

Property and Assets.

Property and plant account	$5,468,989
Supplies and merchandise on hand	178,176
Cash at San Francisco and Douglas Island	100,627
Tacoma Smelting Company stock, 500 shares	56,216
Personal accounts, Douglas Island	6,136
	$5,810,144

The bullion recovery for the year was as follows, the averages being calculated on the total tonnage passed through the mill:

	Total.	Per ton.
Tons crushed	457,802	.....
Tons sulphurets saved	8,143	.....
Tons sulphurets treated at Tacoma Smelter	7,195	.....
Free gold from mill	$559,126	$1.22
Gold from sulphurets	301,611	0.66
Total	$860,737	$1.88

The value per ton of sulphurets was $41.92. At the close of the year there were 845 tons of sulphurets on hand, saved during the year, valued at $35,422, which would bring the total yield up to $896,159, or $1.96 per ton.

The statement of earnings and expenses for the year is as follows:

	Total.	Per ton.
Bullion sold, as above	$860,737	$1.8801
Merchandise account	32,325	0.0706
Iron and foundry profits	5,465	0.0120
Total profits	$898,527	$1.9627
Mining	$321,995	$0.7034
Milling and concentrating	85,101	0.1859
Sulphuret treatment ($7.79 per ton)	56,036	0.1224
General expenses, Douglas Island	4,610	0.0101
San Francisco office	6,173	0.0135
London office	1,326	0.0029
Paris office	224	0.0005
Consulting engineer	1,057	0.0023
Legal expense, San Francisco	812	0.0017
Bullion charges	5,985	0.0130
Total working expenses	$483,319	$1.0557
Construction	62,649	0.1369
Total expenses	$545,968	$1.1926
Net profit for the year	$352,559	$0.7701

The report gives the expenses very fully in detail, and, in fact, supplies all the information that can be expected. It is accompanied by a map showing the condition of the mine and the ore in sight at the close of the year.

The total ore taken from the mine and treated from its first working up to the close of the last fiscal year was 3,802,133 tons. The total yield was $7,479,272 in free gold from plates and $3,101,355 from sulphurets saved, an aggregate of $10,580,627, or $2.78 per ton; the total expenses were $4,979,961, or $1.31 per ton, showing total net profits of $5,600,666, or $1.47 per ton.

United States Steel Corporation.

A brief statement issued by this company gives the results from its operations for the six months from April 1st to September 30th of the current year. The net earnings by months were as follows, those for September being estimated:

April	$7,356,744	June	$9,394,747
May	9,612,349	July	9,580,151
August	$9,810,880		
September	9,200,000		

The total for the six months was $54,945,871, an average of $9,159,145 per month. It will be noted that the reduction in September, when the strike was in progress, was not large. The charges upon these earnings, including dividends on preferred stock, were as below:

Net earnings, as above		$54,954,871
Set aside for sinking fund and maintenance	$7,059,705	
Interest on bonds, six months	7,600,000	
Dividends on preferred stock, 3½%	17,824,962	
		32,484,667
Balance, surplus for the half-year		$22,470,204

From this surplus dividends amounting to $10,143,462, or 2 per cent., were paid on the common stock, leaving a surplus of $12,326,742, which is applicable to surplus or new construction, as the board of directors may decide.

BOOKS RECEIVED.

In sending books for notices, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in a subsequent issue of the Journal.

"Anales de Construcciones Civiles Minas e Industrias del Peru." Lima, Peru; Published by the Society of Engineers. Pages, 271.

"Report on the Inspection of Mines in India, for the Year Ending December 31st, 1900." Calcutta, India; Government Printing Office. Pages, 19.

"Etude Complete des Bassin Ferrifere de Briey, et de la Formation Ferrugineuse Lorraine." By Francis Laur. Paris; Societe des Publications Scientifiques et Industrielles. Pages, 96; with map and illustrations.

"Transactions of the Institution of Mining and Metallurgy." Volume IX. Tenth Session, 1900-1901. Edited by Arthur C. Claudet, Honorary Technical Editor, and C. McDermid, Secretary. London; published for the Institution by E. & F. N. Spon, Limited. New York; Spon & Chamberlain. Pages, 460; illustrated.

United States Geological Survey: Extracts from "Mineral Resources of the United States for the Calendar Year 1900:" Joseph Hyde Pratt, "The Production of Antimony in 1900;" "Chromite or Chrome Iron Ore;" "The Production of Graphite in 1900," and "The Production of Tungsten, Molybdenum, Uranium and Vanadium in 1900." James M. Swank, "Iron and Steel at the Close of the Nineteenth Century." John Birkinbine, "The Production of Iron Ores in 1900" and "The Production of Manganese Ores in 1900." A. C. Peale, "The Production of Mineral Waters in 1900." Alfred H. Brooks, "An Occurrence of Stream Tin in the York Region, Alaska." Charles Kirchhoff, "The Production of Zinc in 1900," and "The Production of Lead in 1900." Edward W. Parker, "The Manufacture of Coke in 1900," "The Production of Gypsum in 1900," "The Production of Mineral Paints and Barytes in 1900," "The Production of Phosphate Rock in 1900," and "The Production of Salt in 1900." Edward W. Parker and J. A. Holmes, "The Mica Industry in 1900." S. J. Kübel, "The Production of Lithographic Stone in 1900." "The Production of Fuller's Earth in 1900." Charles Kirchhoff, "The Production of Copper in 1900." Joseph Hyde Pratt, "The Production of Talc and Soapstone in 1900."

NEW PUBLICATIONS.

"Year-book of British Columbia. 1901." Victoria, B. C.; compiled and published by R. E. Gosnell. Pages, 216; with maps and illustrations.

This is a condensed edition of the larger year-book, which first appeared in 1897. It is intended to give a digest of information relating to the Province, which will be of use to intending settlers, investors and all others interested in its resources. In view of the great relative importance of the mining industry and resources of British Columbia, it is natural that mines and mining should occupy a large part of the book. This section is mainly taken from the report of the Provincial Mineralogist, to which we have heretofore referred. The "Year-book" appears to have been carefully prepared and reliable. It is illustrated by maps and a number of reproductions of photographs.

"Mill Building Construction." By H. G. Tyrrell. New York; "Engineering News" Publishing Company. Pages, 40; illustrated. Price, $1.

This little book gives a number of calculations and diagrams which will be useful to engineers and others who have occasion to design or supervise the construction of buildings for mills. It is divided into three chapters, the first of which treats of the loads which a structure has to carry, including floor loads; roof loads, including snow; wind pressures and other similar matters. This section includes some useful tables, with formulas and rules for calculation. Chapter II. relates to general design, including the calculation of stresses and estimates of cost. The final chapter treats of the design of structural details, and in this will be found many useful tables and a number of sketches, which will serve as hints to the designer. While it is not a complete treatise on mill building, it will be found a handy book by engineers and contractors.

"The Theory of Electrolytic Dissociation as Viewed in the Light of Facts Recently Ascertained." By Dr. Louis Kahlenberg; with the co-operation of A. A. Koch and R. D. Hull. Madison, Wis.; published by the University of Wisconsin. Pages, 54; with tables and diagrams.

This monograph forms Bulletin No. 47 of the "Science Series" issued by the University of Wisconsin. Its object is to consider the relation of recent experiments on the theory of electrolytic dissociation as first advanced by Arrhenius in 1887. It includes the results of a number of experiments made in the laboratories of the University of Wisconsin. It also gives a summary of the latest work of investigators in various parts of the world, and of the modifications which they have found necessary in considering the theory. The main difficulties found in applying it have been in the treatment of solutions, and here there are many difficulties yet unsolved. In this monograph the subject is treated fairly and clearly, and the bearing of different results obtained is given as fully as possible.

"Journal of the Canadian Mining Institute, 1901." Edited by B. T. A. Bell, Secretary. Ottawa, Canada; published by the Institute. Pages, 336; illustrated.

This volume contains the report of the proceedings of the Canadian Mining Institute at its yearly meeting, held in Montreal, in March last. This includes the papers read at the meeting, which included a number of permanent value, summaries of which have heretofore appeared in our columns. The subjects include a wide range, covering descriptions of mines, and milling practice in all parts of the Dominion; of deposits of gold, nickel, iron ore, coal and other valuable minerals. There are two or three on special topics, such as the treatment of arsenical ores and the manufacture of arsenic at Deloro, and the preparation of corundum. These papers illustrate the amount and variety of work done by the members of the Institute and the importance of the operations under their charge.

An introduction of 67 pages gives an account of the visit made by the American Institute of Mining Engineers to Nova Scotia and Newfoundland in August and September, 1900, and of the cordial reception given them by their Canadian brethren.

"Iron and Steel at the Close of the Nineteenth Century." By James M. Swank. Being an extract from "Mineral Resources of the United States, 1900." Washington; Government Printing Office. Pages, 40.

In this monograph Mr. Swank traces briefly the history of the iron and steel trade in the United States during the nineteenth century. or practically for the whole period of its existence. Of this history no one knows more than Mr. Swank, and no one is more capable of preparing such a summary. Necessarily it is very closely condensed, and is limited by space requirements to a mere outline; but it is interesting, and from its condensed form is exceedingly convenient for reference. The historical summary is supplemented by the usual presentation of the statistics of the trade for 1900, which are given in comparison with those for the preceding year. The fullness and accuracy of the figures collected for the American Iron and Steel Association are recognized everywhere, and Mr. Swank's long connection with the Association has enabled him not only to collect the facts, but also to present them clearly and concisely. Taken in connection with the historical summary, they show in a very striking way the rapid growth of the industry in this country, and the great proportions which it has attained.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.

Letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

Smelting Copper by the Use of Gas.

Sir: I notice on page 363 of your issue of September 21st the question, "Do you know of any smelter plants in which gas is applied to the smelting of copper ores?" and the answer that the "Engineering and Mining Journal" does not know of any such furnaces. In this regard I take pleasure in stating that the smelter plant of the Boston-Montana Company at Great Falls, Mont., was put in run in 1891 or 1892, to use producer gas for smelting copper ore for the production of matte, and I presume these gas furnaces are still in run. The gas is supplied by Wellman & Taylor producers using Sand-Coulee coal, and the furnaces are of the tilting open-hearth type, of similar construction to those in the open-hearth department of the Pennsylvania Steel Company at Steelton, Pa. The matte produced was transferred in ladles direct to cupolas and bessemerized into blister copper and anodes for electrolysis.

It is possible the above statements do not bear upon the question of your correspondent, but if I interpret his question correctly, he would be interested in the above. W. H. B.

Syracuse, N. Y., Sept. 30, 1901.

Electro-Silvered Versus Plain Copper Plates.

Sir: In reply to Mr. James R. Cooper's kindly criticism of my paper in your highly esteemed "Journal" of March 16th, page 330, I am unable to give an analysis of the plain copper used in the tests, and I must frankly admit that it did not occur to me that it was necessary to determine that. The metal employed was that called in the trade "brazier's copper," and it was carefully annealed over an open wood fire before being put into place, and, although it may possibly have become overheated in places, subsequent scouring with sand, etc., entirely removed all coating visible to the eye and exposed the bright metallic copper. Moreover, the tarnishing did not occur in patches but quickly covered the whole surface, with the exception of the first two or three inches where the pulp, falling on the plate, kept it clean by carrying away the coating as quickly as it was formed.

I am aware that chemically pure copper will resist tarnishing, but, presuming that it be coated with quicksilver only, will it not become tarnished in the long run by acid waters running over it—in other words, will not the acid in course of time attack the copper and produce either a sub-oxide or a carbonate (where the acid = CO_3) or both?

If I understand Mr. Cooper aright, he claims that, provided the grade of copper be good, plain amalgamated plates will catch as much bullion as electro-silvered plates. In some tests made by George E. Collins* it was established that "notwithstanding the lower fineness of the bullion the net saving on the silvered plate was in excess of that on the copper plate." No mention is made by him of tarnishing, so the presumption is that the copper used was of good grade.

In my own experiment the average fineness of gold in the bullion from the electro-silvered plates showed an increase of 8.84 per cent. over that obtained from the plain copper plates, while there was only a slight increase (a little more than one-half per cent.) in the amount of silver.

I would also like to mention that two of the silvered plates used in

*Discussion on Allan J. Clark's "Note on Plate Amalgamation," Trans. Am. Inst. Min. Engs., California Meeting, September, 1899. This reached me some time after my own paper had been written and mailed, or reference would have been made in the text.

my tests have since been taken up and scraped with a steel chisel almost down to the copper; the resulting bullion was practically of the same fineness as that from the daily clean-up, which is entirely at variance with the experience gained in the Montana Mining Company's mill, so well described by R. T. Bayliss†.

The varying results are difficult to explain. Finally, the occasional discoloration of the electro-silvered plates was most probably due—not to potassium cyanide, as suggested in the paper—but to "copperas" (melanterite) which was afterward detected in the tailings milled‡.

Edward Halse.

Puerto Berrio, Republic of Colombia.

QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert. Nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.

Books referred to in this column can be obtained from the Book Department of the Engineering and Mining Journal.

Air vs. Steam.—Is there any difference between the working force of steam at 60 lbs. pressure and of compressed air at 60 lbs. pressure? I think there would be no difference whatever, and, should there be any difference, it would be in favor of compressed air, being more dry.—R. J. W.

Answer.—Compressed air has the advantage. The tendency of steam to condense because of the lowering of its temperature affects its working efficiency. The difference in favor of compressed air has been variously estimated from 5 to 20 per cent.

Manganese Ore.—Where is manganese ore found, and is the supply equal to the demand? What per cent. of manganese is necessary to justify reduction? In reduction, what elements are favorable? Is there a market for manganese ore, and what is the price per unit?—J. E. M.

Answer.—Manganese ores are not treated for the production of metallic manganese, but for making alloys of iron and manganese, known commercially as ferro-manganese and spiegeleisen. These alloys are made chiefly by the large steel companies, which are the chief consumers. Those companies are also the chief buyers. As to consumption, etc., see the "Engineering and Mining Journal," September 7th, page 303; also "The Mineral Industry," Volume IX. Prices of ores are given in the "Engineering and Mining Journal" each week.

Molybdenite.—Will you inform us through your columns as to the value of molybdenite commercially; as for instance, per ton of a certain per cent.? Also what likely yield per fathom or foot should be obtained in order to pay for mining, in a district where mining costs would run from $2.50 to $3 per ton? There appears to be no demand in Australia, but I understand the ore is valuable in the United States.—H. L. S.

Answer.—The total consumption of molybdenum in the United States in 1900 was equivalent to about 300 tons of ore; in Europe, about the same. It is used chiefly in making some special steels. The demand does not seem to be increasing. No quotations can be given, as the few buyers of ore purchase entirely on assay and do not make any general price per unit. We should say that there was no profit in mining the ore in Australia, as the demand is fully supplied from sources nearer at hand.

Tripoli.—What was the production of tripoli in 1900? What localities produced it? How was it consumed? What were the exports and imports? Give general analysis.—A. J. M.

Answer.—Tripoli production is included with infusorial and diatomaceous earths, of which the output in 1900 is reported by the United States Geological Survey to have been 3,615 short tons, valued at $24,207. These earths have been produced in New Hampshire, Connecticut, New Jersey, Maryland, Virginia, Georgia, Alabama, California and Nevada. There is also a porous silicious rock mined in Newton County, Missouri, which is erroneously called "tripoli." These earths are used in the manufacture of polishing powders, scouring soaps, etc., as an absorbent in making dynamite, and as an insulating material in boiler and steam-pipe covering. The Treasury Department statistics do not separate the amount and value of these materials exported and imported. The composition is SiO_2 with varying amounts of water.

Analyzing Low Grade Silver Ore.—We have chalcopyrite carrying 200 grams silver to the ton, yet are unable to determine the silver in a wet way. Hydrochloric acid in a nitric acid solution of the ore does not give a precipitate, nor can such a precipitate be obtained by adding ammonium hydrate to the residue of the nitric acid solution, and the nitric acid to acidify, in case the silver should exist in the ore as a chloride.—W. E. U.

Answer.—In an ore as low grade as the above—about 7 oz. to the ton—a wet assay requires the use of large samples. W. E. U. should use a sample weighing at least 5 A. T., and one weighing 10 A. T. is not too large. Dissolve with nitric acid, filter to remove silica, evaporate to small bulk, and the silver will be precipitated as chloride on adding hydrochloric acid.

For the fire assay of copper sulphides carrying low values in silver, scorification assay gives best results. On account of the loss by volatilization in cupellation and the usual loss by scorification, the silver may be, for exact work, determined by "corrected assay"; 10 or even 20 scorification charges are used, the lead buttons extracted from the slag and cupelled separately, the silver buttons are weighed and their average taken. The slag is pulverized and assayed by crucible assay, the resulting lead buttons cupelled, the silver buttons weighed and their average taken. The cupels are pulverized and assayed by crucible assay, the lead buttons cupelled, the silver buttons weighed and their average taken. The average amount of silver recovered from the slag and cupel in this manner is added to the average amount obtained by the first scorification assay, the result being the corrected assay. See Van Furman's "Manual of Practical Assay."

We shall be glad to have some of our readers give an opinion on the best method of determining silver in such an ore as bothered W. E. U.

†"The Accumulation of Amalgam on Copper Plates," op. cit., Pittsburg meeting, February, 1896. See also Frank Owen's discussion on this paper, Colorado meeting, in September of the same year.

‡This correction has been made in the original paper.

A NEW MINE LAMP USING ACETYLENE GAS.

Proper lighting of drifts, tunnels, mines and general engineering works during construction has always been a problem and has long afforded an opportunity for investigation. Various devices using oil, candles and electricity have been presented to solve the problem, and lately acetylene gas has come to the front. Oil has many advantages; it is cheap, is easily obtainable and the men are accustomed to its use. It has, however, two serious drawbacks. The smoke which arises is often so great as to drive men out of small workings, many mines requiring extra ventilation on this account. In gold and silver mines it cannot be used successfully because spilled oil interferes with the separation of the metal. Where a good grade of oil is used, the cost of each miner's lamp, including wicks, is about 5c. per lamp for 8 hours' use. Pure kerosene makes it somewhat less, but gives more smoke.

Paraffin candles have been generally adopted in the West. In the large mines of precious metals, and the miners have become so accustomed to their use that this is practically the only means of subterranean illumination used in these mines. Candles, however, are expensive to start with, and then so much of the wax is lost by guttering that only a part is used in illuminating. However, they partially overcome the difficulty of smoke and are much less liable to set a mine on fire, and therefore have proved a little more satisfactory than oil. The cost of lighting by candles greatly exceeds that of oil. Figures obtained from a silver mine in New Mexico employing 350 men show that the cost for candles is $3 per month per man working 30 days per month, or 10c. per day per man. Of course, the expenses will sometimes run a little above this and sometimes below, but the mine is a representative one and the figures reliable.

Electricity would appear at first thought to be the ideal method of lighting a mine and in many cases it has proved satisfactory. Its drawbacks are that the lights cannot quickly and readily be moved from place to place and withdrawn when a blast is to be fired. The rocks cut the covering and sulphur in the water and fumes from the powder rapidly destroy the insulation. The cost of electricity per lamp is very difficult to obtain, owing to the many items of expense that enter into its make-up, such as transportation of fuel, interest on plant, repairs, loss in transmission, etc. The general opinion seems to be that a 16-candle-power electric light costs from 8c. to 10c. per 8 hours.

The ideal light must be bright and clear, free from smoke or smell, easily transported, and one which is inexpensive in first cost and cost of operation. It must above all be capable of use by inexperienced men and those found on the ground. It must be safe, durable and economical. Such a light would permit a greater output by the miner and a reduction in the number of accidents. So much for the old methods of mine lighting.

The improved system illustrated herewith, known as the Baldwin Acetylene Mine Lamp, is meeting with success. The beautiful white penetrating light obtained from acetylene is well known, its effectiveness and desirability for places where a powerful portable light is necessary being clearly shown by the acetylene bicycle lamp. Tests have demonstrated its light to be about 15 times brighter than coal gas and it resembles sunlight more nearly than any other illuminant. Attempts have been made to perfect an acetylene lamp which would endure the severe service imposed by conditions found even in the best of tunnels and mines. These methods have been partially successful and enough experience has been obtained to prove the value of acetylene for this work. The Baldwin lamp has been in use for the last year, during which time under close investigation the results have been uniformly satisfactory. These lamps are now offered by the Ingersoll-Sergeant Drill Company, of New York.

This lamp is made in two styles. The "Superintendent's Lamp," shown in Fig. 1, is intended for superintendents, surveyors, mine bosses, inspectors and others moving about from place to place. It is a very compact form, provided with a swivel hook bail which can be hooked in the clothes or turned and used as a handle. Two swinging holding handles are also provided for cases where it is desirable to use the lamp like a bull's eye. Just under the center of the burning jet is a metal point which permits the flame to be placed directly over a surveying point. As the flame when looked at end on is about ⅛ in. in diameter a very close setting of a transit is possible. This lamp weighs 9 oz. and burns at full brilliancy 4 hours, costing not over 2c. for this period.

The larger form, or "Gang Lamp," is intended for headings, enlargements, stations and switching points where a large volume of light must be had to permit several men to work. The No. 8 lamp, burning ½ ft. per hour, gives about 20 candle power. When placed in the dark 6 in. away from a 16-candle-power electric light and looked at from a distance it makes the electric light appear only a red wire. The No. 7, burning ¼ ft. per hour, gives as much light as 6 sperm candles or three oil lamps. As these lamps give off absolutely no smoke, the actual illuminating results are far greater, as there is nothing to deaden the effect of the light. This lamp can be turned upside down or rolled about on its side without fear of the light going out or in any way affecting its burning qualities.

Calcium carbide, from which acetylene gas is produced, as is well known, is made by mixing lime with powdered coke, and submitting this

mixture to the intense heat of an electric arc. When fused and allowed to cool it becomes a hard black mass, and this when broken up or crushed into various sizes is placed in cans and made ready for shipment. It has a great chemical affinity for oxygen and when brought into contact with water the oxygen of the water unites with the calcium of the compound, liberating the oxygen and carbon, thus forming acetylene gas, $H_2 C_2$, and it is this gas which is burned in the lamp.

With regard to the effect of acetylene on the oxygen of the air in confined spaces, Prof. Vivian B. Lewis says: "The researches of Dr. Grehant have shown us that when burning with a smokeless flame, no carbon mon-oxide can be detected in the products emitted by the combustion of acetylene, and its sanitary position will therefore be defined by the amount of oxygen abstracted from the air and carbon dioxide produced, as compared with other illuminants. Taking the average-sized room, which would be well lighted by an illumination equal to 64 stand-

Baldwin Acetylene Mining Lamp.

ard candles, we find that this amount of light from the various illuminants would show the following results:

	Oxygen removed from air, cu. ft.	Products of combustion. Water vapor, cu. ft.	Carbon dioxide, cu. ft.
Sperm candles	38.5	26.2	43.6
Paraffin oil	24.9	14.0	39.8
London gas: Batswing	26.1	29.4	19.2
Argand	23.0	25.6	17.0
Regenerative	10.6	8.3	5.2
Incandescent	3.1	4.6	1.8
Acetylene	5.0	2.0	4.0

Relative to operating expense it has been found that 1 lb. of carbide will produce 5 cu. ft. of acetylene gas, but allowing for contingencies call this 4 cu. ft. per pound of carbide. Carbide sells at 5c. per pound at the factory, or including freight, 6c. delivered at the mine. No. 7 lamp holds ½ lb. of calcium carbide and has a burner consuming ¼ cu. ft. per hour, or a run of 8 hours at a cost of 3c., with a flame giving as much light as from 6 to 10 candles or 3 ordinary miner's oil lamps, the oil lamps costing 15c., or candles 60c. This is a considerable saving, to say nothing of the freedom from smoke, smell and grease. No. 8 lamp requires 1 lb. of carbide, which costs 6c. to burn ½-ft. tip 8 hours, with the same proportionate saving as to oil and candles.

To afford a further comparison we select the New Mexico mine, already mentioned, working 365 days in the year, and consider it using Baldwin lamps burning ½ lb. carbide per day:

First Year.

Candles for 350 men at $3 per month per man for one year		$12,600.00
365 No. 7 lamps at $4.50 cost	$1,575.00	
175 lbs. of carbide per day for one year cost	3,832.50	
		5,407.50
Saved by using Baldwin acetylene lamps		$7,192.50

Second Year.

Candles for 350 men at $3 per month per man for one year cost		$12,600.00
175 lbs. of carbide per day for one year cost	$3,832.50	
Repairs, say 50c. per lamp	175.00	
		4,007.50
Saved second year by using Baldwin acetylene lamps		$8,592.50

But the saving is actually far greater, for two, three, and even four men often work by the light of one lamp, using candles or oil only on entering and leaving the mine, so that not nearly so many lamps are required, or so much carbide consumed as in the above estimate.

PATENTS RELATING TO MINING AND METALLURGY.

UNITED STATES.

The following is a list of patents relating to mining and metallurgy and kindred subjects, issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Engineering and Mining Journal upon receipt of 25 cents.

Week Ending September 24th, 1901.

683,024. MEANS FOR PACKING LEAKS IN PIPES. Joseph Dunn, Chicago, Ill. An annular packing ring, combined with a two-part clamp, radial set screws thereon adapted to positively engage a pipe, a plurality of set screws parallel to the axis of the clamp, the inner ends of which extend within an annular rabbet, compressing rings compressing a plurality of sections, each movable longitudinally of the other and rabbeted at one end.

683,050. MECHANISM FOR THE PRODUCTION OF BOILER PIPES, TUBING, ETC. Otto Klatte, Dusseldorf, Germany. A mill for rolling metal bodies of cylindrical form, comprising two horizontally-mounted adjustable rolls and two vertically-mounted adjustable rolls, driven by means of suitable gearing, or a series of such pairs of rolls, arranged together so as to form a passage between them.

683,065. PROCESS OF PRODUCING ILLUMINATING GAS. George Ottermann, Vienna, Austria-Hungary. A process of producing gas from household refuse and similar organic waste substances.

683,067. PETROLEUM INCANDESCENT-LAMP BURNER. Hermann Pittner and Friedrich Richter, Vienna, Austria-Hungary. A petroleum incandescent lamp burner having an air jacket for the admission of the air, the inner surface of which is made non-reflecting and absorbent.

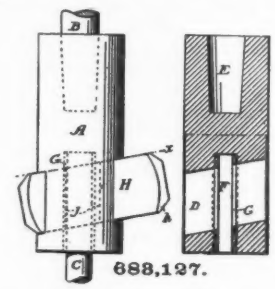
683,089. REDUCING OXIDES OR OTHER METALLIC COMPOUNDS. Knut C. Wideen, Brooklyn, N. Y. A process of reducing oxides, which consists in putting them into a furnace and forming a vacuum in said furnace, and then closing the same and submitting the oxides to a temperature greater than that of the oxyhydrogen blowpipe, and which alone is sufficient to separate the oxygen. Applicable to the reduction of aluminum.

683,107. SMELTING FURNACE. Leonard S. Domoulin, Flushing, N. Y. A heat-producing device for the smelting of ores and the fusing of minerals in furnaces, an electric furnace, a conductor consisting of a bar of high-resisting material extending through the furnace chamber, having the portion thereof within the furnace of less diameter than its ends, and a covering of insulating refractory material surrounding the reduced portion.

683,114. GRAPHITE LUBRICATOR. Frederick Gielow, Sr., Chicago, Ill., assignor to Frederick Gielow, Jr., and Charles Burmeister, same place. A graphite lubricator having in combination a reservoir, a barrel leading directly therefrom, a plunger within the reservoir and reciprocating into and out of the barrel, means for causing the reciprocation of the plunger, and a cross-arm on the plunger for agitating the contents of the reservoir and forcing the same toward the barrel.

683,116. PROCESS OF MAKING EXPLOSIVES. Adam C. Girard, Paris, France. A process of making explosives, consisting in forming a picrate in a suitable oil and adding a chlorate, or adding another suitable nitrogen derivative and a chlorate.

688,127. ROCK-DRILL CHUCK. Frederick Long, Footscray, Victoria. A chuck having a bore for a bit shank and a keyway through the chuck, inclined in relation to said bore, and communicating with



683,127.

the chuck bore, a bit shank, and a key for the inclined keyway, having an incision across its inner face parallel with the bore for the bit shank.

683,134. HYDROCARBON BURNER. James A. Mason, Philadelphia, Pa., assignor to Charles J. Wilson, New York, N. Y. A hydrocarbon burner, in combination with a retort, a dome integral with the retort and communicating with one end thereof, a leg depending from the retort and having a vapor duct communicating with the dome.

683,143. PUMP. Weslie M. Rhoades, Joplin, Mo. A duplex pump, comprising steam and water cylinders disposed in axial alignment, an inlet chamber for the water cylinder, including separate compartments communicating with the center and ends of the cylinder, respectively, the compartment at one end communicating around the end of the cylinder, with proper valves, ports and connections.

683,152. EXPLOSIVE ENGINE. Victor St. John, Fairmont, Minn. A gas engine, comprising the cylinder, the piston working in said cylinder, its actuating crank, the passage in said piston, the pipe connecting said passage with the source of gas supply, and the valve arranged in the piston, whereby the working stroke of the piston, the rushing of the air through the passage and valve will carry the gas into the cylinder.

683,158. COAL OR ROCK DRILL. Isaac Wantling, Peoria, Ill. A coal or rock drill, comprising a support of two standards connected top and bottom, a yoke pin for detachably securing the feed-nut in adjusted positions in said frame, dovetailed threaded linings secured in the sections and engaged by a thread-bar actuated through mechanism carried in the extended body.

683,165. VALVE FOR STEAM ENGINES. Charles M. Wilcox, New Paris, Ohio, assignor of one-half to Charles W. Bloom, same place. A steam-engine valve, of circular form, having steam spaces in the face thereof, an upwardly-projecting stem and pivot, and a downwardly-projecting pivot.

683,187. APPARATUS FOR DRYING BICARBONATE OF SODA. Ernest Solvay, Brussels, Belgium, assignor to the Solvay Process Company, Syracuse, N. Y. A drying apparatus, comprising a receptacle for receiving the material to be dried, and a filtering body, having a portion of its surface movable into engagement with said material, and provided with a main chamber, a series of branch chambers extending from one side of said surface and having openings communicating with the former chamber.

683,188. PROCESS OF TREATING LIME. Frank N. Spear, Los Angeles, Cal. A process for treating lime, which consists in first slaking quicklime, and then, and when in a finely-divided condition, bringing the slaked lime into contact with carbonic-acid gas.

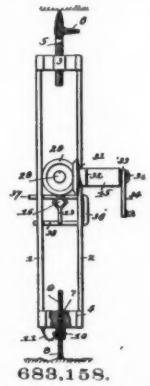
683,193. COAL-AUGER POST. Cecil R. Anderson, Allegheny, Pa. An elongated metallic plate or strip adapted to be secured to a coal-auger post, and having a straight projecting edge adapted to extend beyond the face of the post, the edge being formed with a succession of supporting points.

683,207. MILLING TOOL. Samuel D. Keene, Providence, R. I., assignor to Lorenzo P. Sturtevant, North Swansea, Mass. A milling tool having a suitably-mounted annular cutting member, inner and outer independently-movable spring-pressed friction members having the cutting member located between the friction members.

683,232. CARBURETER. Joseph Stubbers, Covington, Ky., assignor to the Incandescent Light and Stove Company, Cincinnati, Ohio. A gas machine, in combination with a generator having absorbent material, and being so arranged that the absorbent material is in communication with the gasoline supplied from the tank, a tank air tight, so that an air pressure can be created therein.

683,255. APPARATUS FOR FORMING PIPE MOLDS. Jacob K. Dimmick, Philadelphia, Pa. A pipe-molding apparatus, with the flask of a movable former centrally located therein, having an enlarged flaring compressing section near its lower end, an enlarged guide section formed on the upper portion of the former, a bell pattern, a guide plate secured to the upper end of the flask to hold the bell pattern.

683,263. ELECTROLYTIC PRODUCTION OF CATHODE PLATES. Elmer G. Elliott and Valentine Kishner, Perth Amboy, N. J. A metallic cathode for receiving movable sheet-metal deposits upon both its sides throughout its immersed surface, said plate being partially immersed in an electrolytic solution from which metal may be deposited from a suitable anode, and with a scratch-groove upon its exterior, whereby the metal electro-deposited is rendered separable along the line of the groove during deposit.



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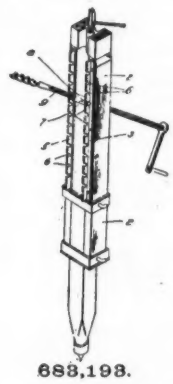


683,193.

683,275. BORING INSTRUMENT FOR BUILDING OR MINING PURPOSES. Emil Hartung, Mulhausen, Germany. An instrument constituting a combined boring tool and earth-specimen exhibitor, having a portion of its length formed with a series of helical threads, and the remaining portion of its length formed with vertical threads.

683,300. APPARATUS FOR THE MANUFACTURE OF GAS. Howard Lane, Birmingham, England. A gas-making apparatus, a generator, a regenerator, a connection between the lower ends of the generator and regenerator, means for introducing air beneath the raw fuel in the generator and for forcing the gaseous products of combustion downward in said generator and through said low connection to the regenerator; means whereby air may be introduced in said low connection to complete combustion, the checker-work in the regenerator composed in its lower part of fire-brick and in its upper part of metal, a water spray for directing water to the checker-work, means for scouring out the remnant of the gaseous products of combustion from said regenerator, means for directing the steam from the regenerator up through the fuel in the generator.

683,324. VAPOR BURNER. John R. Pensyl and Charles W. Pensyl, Topeka, Kan. A vapor burner having a combination with an oil pan having a central socket and upwardly-extending projections surrounding the same, a generator comprising a casing resting on said projections of the pan, and provided with a central depending lug snugly arranged in the socket of the pan; and also provided, adjacent to its upper end, with exterior lugs, lower and upper chambers in the casing, a core snugly fitting the casing, and having a tortuous way in its side connecting the lower and upper chambers.

683,325. EXTRACTION OF PRECIOUS METALS FROM THEIR ORES. Henry J. Phillips, London, England, assignor to the Golden Link Consolidated Gold Mines, Limited, same place. A method of extracting precious metals from refractory sulphide or telluride ores without roasting, which consists in subjecting the ore, without roasting, and in the form of a powder—under heat and pressure—to the action of alkaline polysulphides in solution, of such weakness that same will have a selective action, namely, will dissolve the elements which are combined with the gold, and for which the polysulphides have a greater affinity than for gold, without dissolving the gold itself, which latter is thus dissociated and can then be recovered by any known suitable process for recovering free gold.

683,338. APPARATUS FOR THE PRODUCTION OF COMPRESSED ARTIFICIAL SANDSTONE. Walter Schulthess, Zurich, Switzerland. An apparatus combining a steaming chamber, with a chambered platform for the artificial-stone compound, means for causing a superheating fluid to circulate through the platform, superheating pipes extending therethrough, and means for causing steam to flow through the pipes into the chamber.

683,354. PROCESS OF REFINING CRUDE MINERAL OILS AND THEIR DISTILLATES. Felix C. Thiele, New Orleans, La., assignor of three-fifths to John Finke and John M. Parker, same place. A process of refining crude mineral oils of the Lima type, consisting in the addition of nitric acid thereto until sulphurous gases cease to be evolved; the conversion of the nitro and nitroso compounds into basic compounds by the addition of a nascent hydrogen-producing substance until, in a tested portion, nitrous gases cease to be evolved in the presence of sulphuric acid, and the removal of the newly-formed products by a subsequent acid treatment.

683,367. INGOT MOLD. Frederick W. Wood, Baltimore, Md. A cast-metal ingot mold having projecting laterally from its opposite sides, at or near the top, integral massive lugs with recessed shoulders at the lower ends adapted to engage with the supporting arms of a mold-lifting device, and shielding portions arranged to prevent lodgment of molten metal on the recessed shoulders.

683,368 and 683,369. INGOT STRIPPER. Frederick W. Wood, Baltimore, Md. An ingot stripper having a plunger arranged to contact with the ingot, a support having laterally-separable grips, mechanism for moving the support and plunger relatively to each other in a vertical direction to strip the ingot, a fluid-actuated motor carried on, and movable with, the stripper mechanism, and connections between said motor and the grips, arranged to force them inwardly toward each other during the stripping operation.

683,372. CONVEYER. Alfred M. Acklin, Pittsburg, Pa. A conveyer, having in combination the parallel bars and the connecting links thereof, with the pans or molds rigidly secured at one end to the links, and having hooked lugs at their opposite end to engage the bars.

683,374. PNEUMATIC HAMMER. Jean Beche, Huckeswagen, Germany. A pneumatic hammer, consisting of a cylinder with two pistons, one of which is moved upward and downward by the vacuum and air pressure arising by the movement of the other piston, the arrangement of a channel within the cylinder wall, the upper opening of which channel is situated directly above the spot at which the operating piston stands in its lowest position, the other end of which is connected with the space between the two pistons.

683,375. REDUCING FURNACE. Charles Bishop, San Francisco, Cal. A reducing furnace having fire boxes at its opposite sides, a series of arched plates arranged in the furnace, and rearward of the fire boxes, the plates being perforated; inclined runways below the plates, a settling tank for receiving material from the runways, and a bullion pot having connection with the tank.

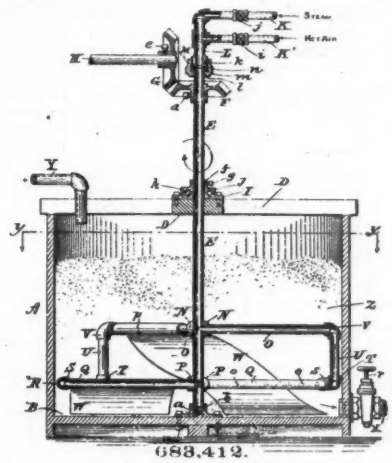
683,378. REVERBERATORY MELTING FURNACE. William J. Brown, Philadelphia, Pa., assignor of one-half to J. W. Paxson Company, same place. The combination of a furnace with a melting pot and a burner, the furnace having in it an opening for the burner; a combustion chamber extending from the opening to and over the melting pot, the chamber increasing in area of cross-section from the burner opening until it reaches the pot, and flues beyond the melting pot, forming a continuation of the combustion chamber, and leading down the side of the pot, and then returning under the melting pot to an outlet.

683,401. CARBURETER. William P. Houze, Paris, Tenn. The combination of a carbureting chamber, a mixer and equalizer, an air receptacle in the air supply to the carbureting chamber communicating with the mixer and equalizer, and means in the air receptacles for relatively increasing the supply of air to the carbureting chamber and decreasing the supply to the mixer and equalizer.

683,404. ROCK-DRILLING MACHINE. Manetho C. Jackson, Denver, Colo., assignor, by direct and mesne assignments, to the Gardner Electric Drill and Machinery Company, same place. The combination with a casing and a turning drill and drill shaft, of a yoke in axial alignment with the shaft, means for reciprocating the yoke, a sliding connection between the shaft and yoke, means for preventing the rotation of the yoke, stops on the shaft to the front and rear of the sliding connection, and a spring interposed between each stop and the connection.

683,409. PROCESS OF MAKING GAS. Howard Lane, Birmingham, England. A process of making gas, consisting in introducing an air blast beneath the raw fuel, forcing the gaseous product of combustion downward through the burning fluid located beneath the raw fuel, causing the gaseous products, after leaving the burning fuel, to flow upward to the heat checker-work in a regenerator chamber, furnishing a supply of air to the gaseous products of combustion before they reach the regenerator, in order to complete combustion, then cutting off the air supply and generating steam by causing water to contact in the form of spray with the highly-heated checker-work.

683,412. ORE SEPARATOR. Adelbert J. Perry, Providence, R. I. The combination of a receptacle for holding pulverized ore, a vertical steam pipe rotatably mounted in the receptacle by proper supports, and having its lower end closed; means adapted to impart a rotary movement to the pipe, radial horizontal pipes opening from the vertical pipe and provided with perforations, radial arms extending horizontally from the vertical pipe, inclined blades or scrapers supported by the radial arms and extending close to the bottom of the receptacle, an inlet pipe in the top of the receptacle, and an outlet pipe extending from the receptacle at or near the bottom thereof, substantially as shown.



683,412.

683,420. LAMP FOR BURNING PETROLEUM, KEROSENE, ETC. Benjamin H. Copeland, Derby, England, assignor to Samuel Hall, same place. The combination with a suitable burner, of an oil reservoir supporting the burner above a central wick chamber having a perforated peripheral wall, an annular body of absorbent material surrounding the perforated wall of the wick chamber, an annular outer oil chamber, and an air tube forming a communication between the top of the oil chamber and the wick chamber.

GREAT BRITAIN.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy.

Week Ending September 7th, 1901.

14,657 of 1900. B. Harlow, Maedesfield. Improved apparatus for tapping blast furnaces, etc.

14,749 of 1900. J. H. Dewhurst, Sheffield. Improved slag ladles for making the slag more readily pourable.

17,119 of 1900. A. Ludwig, Germany. Artificial production of diamonds by electrically melting carbon in an atmosphere of compressed hydrogen.

17,179 of 1900. L. Rousseau, Paris. Portable furnace for melting steel and other metals.

18,196 of 1900. C. Linzen, Unna, Germany. Improved fastening for safety lamps to prevent unauthorized opening.

10,974 of 1901. Castner Electrolyte Alkali Company, Niagara Falls, U. S. A. Improved form of electrodes for electrolytic cells.

13,042 of 1901. A. F. Cothias, Paris. A crucible for casting, under pressure, alloys and fusible metals.

PERSONAL.

Mr. F. A. Adams, formerly of Mammoth, Ariz., will have charge of a cyanide plant at Fairbanks, Ariz.

Mr. Thomas Weir has returned to Salt Lake from a lengthy trip through the Eastern States and Canada.

Col. R. G. Leckie, of Sudbury, Ont., managing director of the Orford Copper Company, has gone to New Caledonia.

Mr. J. E. Ryan, of San Francisco, president of the Atlas Pipe Wrench Company, has been in New York a few days.

Mr. G. E. Lake has been appointed manager of the Ermaine Gold Mining Company's Smoky Hill Mine at Wall Street, Colo.

Mr. Ferdinand McCann, mining engineer, of the City of Mexico, has just returned home from a prolonged trip examining mines.

Mr. John Fulton, of Johnstown, Pa., is on his way to Sydney, Cape Breton, N. S., to look after some coal lands for Boston people.

Mr. Vanard O'Neill, who has spent the past 5 years in the British Northwest in the interests of Eastern clients, is in Salt Lake.

Mr. G. L. Miller, who has been superintending mines at Hunker Creek, Dawson, N. W. T., Yukon, has returned to Vancouver, B. C.

Mr. J. M. Dikeman has re-entered the employ of the Red Boy Consolidated Gold Mining Company at Lawton, Ore., as resident manager.

Mr. C. W. Pritchett, mining engineer, of Denver, Colo., has just returned from a professional trip to British Columbia and Montana.

Mr. R. J. Davison, general manager of the Chainman Mining Company, at Ely, Nev., recently returned from a month's trip to New York.

Mr. L. A. Dunham, general manager of the Clifton Consolidated Copper Company, has returned to Clifton, Ariz., from a business trip East.

Mr. S. C. Dickenson, of Chicago, Ill., formerly with the Ray Copper Mining Company, of Pinal County, Ariz., is mechanical draughtsman with the Shannon Copper Company.

Mr. J. Bishop Tingle, instructor in chemistry at the Lewis Institute, Chicago, Ill., has been appointed professor of chemistry at Illinois College, Jacksonville, Ill.

Mr. J. Melczer who is largely interested in the El Copete copper mines of Sonora, Mex., returned to Los Angeles, Cal., recently from a 3 months' trip to Europe.

Mr. Charles Butters, of Charles Butters & Company, Limited, of Salt Lake, Utah, has gone to Salvador, C. A., to inspect mining property in which he is interested.

Mr. A. C. Washington, president of the Horn Silver Mining Company, was at Salt Lake last week from New York, to attend the annual meeting of the company on October 2d.

Mr. A. J. Scott, mayor of Hancock, Mich., has gone to British Columbia, where he will remain several weeks looking into the merits of a gold claim, in which Hancock men are interested.

Mr. Isidor Davidov leaves for Barranquilla, Colombia, S. A., on October 12th, to prospect additional mining enterprises for the Santa Barbara Placer Mining Company, of New York City.

Mr. J. C. Treadwell, assayer and chemist for the Mexican Ore Company at Parral, Mex., has gone to Sierra Mojada to accept a position with the same company. Mr. A. Clover will fill his place at Parral.

Mr. J. I. Lyle, who has been connected with the home office of the Buffalo Forge Company for the past 5 years, is now manager of the New York branch, at 39 and 41 Cortlandt street, New York City.

Mr. G. A. McIntosh, of the Acme Mining Machinery Company, of Salt Lake City, is on an Eastern trip in the interest of his company, to Chicago, Minneapolis, Detroit, Boston and New York, and also Canada.

Mr. A. C. Luck, general manager of the mining interests in Nevada of Mr. Anson Phelps Stokes, of New York City, has tendered his resignation, and will make San Francisco his headquarters for the present.

Mr. F. W. Dunn, manager of the Quartette Mines at Searchlight, Nev., has been East on business connectedl with the railway the Quartette Company is building from its mines to its mill on the Colorado River.

Mr. Edward Holth, who for 15 years has been connected with the Pennsylvania Steel Company at Steelton, Pa., as mechanical engineer and chief draftsman, has been appointed chief engineer of the Dominion Iron and Steel Company, Sydney, C. B.

Capt. James H. Rough, who has had charge of the underground workings of the Cleveland-Cliffs Lake Mine at Ishpeming, Mich., for 3 years past, will return to Negaunee to take charge of the company's new mine in the eastern part of that city.

Capt. Baird Halberstadt, of Pottsville, Pa., has gone to West Virgina to inspect an immense tract of land in Clay and Nichols counties, containing some 80,000 acres. He will establish headquarters at Clay Court House, Clay County, and expects to be there about 2 months.

Sir Christopher Furness, head of the Furness-Withy Shipbuilding Company, the Weardale Steel Company, the South Durham Steel Company, and interested in other English steel enterprises, is inspecting some of the leading shipyards and steel works of the United States.

Mr. George Steele, of Shamokin, Pa., for a number of years superintendent of the Nelson Colliery of J. Langdon & Company, succeeds Mr. Richard Mainwaring, of West Pittston, as superintendent of the Temple Iron Company's collieries between Pittston and Forty Fort, Pa.

The following appointments have been made on the Geological Survey of the United Kingdom: Dr. J. S. Flett to assist in the petrographical work of the Survey, Mr. J. Allen Howe and Mr. H. H. Thomas geologists on the English staff, Mr. H. B. Muff on the Scottish staff and Mr. W. B. Wright on the Irish staff.

OBITUARY.

Ashel J. Severance, a reputed inventor of the diamond drill, died in Denver, Colo., recently. He was born in Vermont in 1829. He sold out his interest in his diamond drill patents in 1870, and shortly after went to Colorado, where he became interested in many mining ventures. He lost money in these, and at his death was a poor man.

C. S. Batterman, who had a wide reputation as mine superintendent, died October 7th at a hospital in Butte, Mont., after operations performed for intestinal and abdominal troubles. Mr. Batterman was born at Placerville, Cal., March 20th, 1859. He was educated at the University of California, and was graduated in mining engineering in the class of 1879. Subsequently he was employed as superintendent of mines in old Mexico, Arizona, Nevada, Colorado and Montana. In recent years and until the time of his death Mr. Batterman was chief engineer of the Amalgamated Copper Company, and superintendent of the mines owned by the Boston & Montana Consolidated Copper and Silver Mining Company, of Butte, Mont. In May, this year, he was elected a member of the American Institute of Mining Engineers. Besides his reputation gained as a mine superintendent he was known as the designer of an improved mining transit.

SOCIETIES AND TECHNICAL SCHOOLS.

Oberlin College.—The Severance chemical laboratory was dedicated recently, the address being made by President Ira Remsen, of Johns Hopkins. It was announced that Mr. Lewis Severance, of New York City, the donor of the laboratory, had given the sum of $40,000 for an endowment for the chair of chemistry.

Colby College.—At the spring meeting of the trustees of this college, at Waterville, Me., the department of geology was abolished, and the teaching of geology is to be by the assistant in chemistry. The abolition of the department necessarily legislates Dr. W. S. Bayley from the position which he has held during the past 12 years.

Michigan College of Mines.—The entering class this year numbers 73, as compared with 48 last year. The following is the representation of entering students from the various States: Michigan, 39; Wisconsin, 15; Illinois, 8; Washington, 3; Minnesota, 2, and 1 from the following: California, Virginia, New York, Connecticut, England and Scotland.

Engineers' Club of St. Louis.—At the meeting on October 2d 33 members and 25 visitors were present.

On invitation of the president, Mr. A. V. A. Brueggeman, president of the Architectural Club, gave further information with reference to obtaining down-town quarters in conjunction with the Architectural Club and the St. Louis Chapter of the American Institute of Architects.

Mr. Wm. H. Bryan read the paper of the evening, entitled, "Smoke Abatement in St. Louis." Mr. Bryan gave a brief history of the movement in St. Louis, and of the prominent part taken in it by the Engineers' Club. He stated clearly the difficulties which have been encountered and the results. Regarding fuels, it was shown that the cost of smokeless fuels was beyond the reach of the ordinary consumers and that the problem resolved itself into burning the ordinary fuels smokelessly.

Smoke preventing devices were discussed and classified as follows: Steam jets, coking furnaces or fire-brick arches, down-draft furnaces, automatic stokers and powdered fuels. Each in turn was described and illustrated by numerous lantern slides. It was stated that while no one device was applicable to all furnaces, some one or more would be found for each furnace which would work successfully, providing it was intelligently operated and maintained.

INDUSTRIAL NOTES.

The Southern Cement Company, Birmingham, Ala., has installed new machinery which will enable it to double its present capacity.

The Stilwell-Bierce & Smith-Vaile Company, of Dayton, O., recently secured a contract for the shipment of 15 pumping equipments for various uses in China. The machinery was ordered by Reuter, Brockleman & Company, of Shanghai.

J. H. Frenier & Son, of Rutland, Vt., have recently shipped 8 of their sand pumps for slime and tailings. Two of these went to Guanajuatillo, Mex. The firm is now working on an order for 9 pumps of largest size for export to Mexico.

Frederick T. Snyder, manager of Frederick T. Snyder & Company, contracting engineers, of Chicago, Ill., is at Edmonton, Alberta, arranging for the installation of a 2,000-yd. gold dredge on the Saskatchewan River, for the Wonderly Gold Mining Company.

William Jessop & Sons, Limited, of Sheffield, Eng., have awarded a contract to the American Bridge Company for the erection of buildings and to the Westinghouse and other companies for machinery for its American plant at Washington, Pa. The company will put up a large crucible steel plant, to cost $500,000.

The Chester Iron and Steel Company, organized at Chester, Pa., has secured the long idle plant of the old Combination Steel and Iron Company, adjoining Roach's shipyard, and will operate it under the superintendency of John McFadden. The other men interested are P. Haliday, F. F. Vanderfort, H. P. Nash, H. Whittemore and Charles Dreifus, of Pittsburg.

The Carnegie Steel Company states that during September all records for the production of steel in one month were broken by its mills at Braddock and Homestead, Pa. During the month the Edgar Thomson plant at Braddock turned out 74,400 tons of ingots in the converting mills. In the output of structural shapes, etc., all previous records were broken by 3,500 tons.

The Sturgess Governor Engineering Company, West Troy, N. Y., making governors for turbine and impulse water wheels, has bought a site at Watervliet, near Troy, N. Y., and will erect a plant to be thoroughly up to date in every respect. The officers are John Don, president; John Sturgess, vice-president and general manager; and E. R. Thomas, secretary and treasurer.

J. W. Nesmith, the president of the Colorado Iron Works, of Denver, Colo., on a recent trip East, closed a contract with the California King Gold Mines Company to erect a cyanide plant of a daily capacity of 1,000 tons at its mines at Picacho, Cal. The contract is said to involve several hundred thousand dollars, and the plant when completed will be one of the largest of its kind in the world.

T. C. Alcott & Son, of Mount Holly, N. J., have bought the entire plant and patents of the John W. Taylor Manufacturing Company, and the combined plants will hereafter be operated by the Alcotts under the name of the Risdon-Alcott Turbine Company. The product will comprise the Risdon turbine, in both cylinder and outside register gate styles, the high duty turbine of inside register gate pattern, and the Taylor sleeve gate turbine, cylinder gate type.

Nearly two years ago the Buffalo Forge Company, of Buffalo, N. Y., shipped a mechanical induced draft plant to Japan for the Osaka Water Works. A recent letter received by the company expresses the highest approval of that system of mechanical induced draft, together with a statement that the coal bills have been reduced 15%. With some proposed improvement in handling the firing the engineers predict that there will be a still further saving in the amount of fuel burned. The plant has excited a great deal of interest in the far East.

Stein & Boericke, of Primos, Pa., state that owing to the growth of their metal business they have found it advisable to incorporate the same under the name of the Primos Chemical Company, under a Pennsylvania charter. The manufacturing business will remain under the same management as heretofore, and, with increased facilities, the firm states that it will be able to pay still closer attention to the manufac-

ture of its specialties and will also be able to add such new metals and alloys as its trade may require. The firm has added considerable new machinery, apparatus, etc., to its plant, and also a new laboratory, and, with increased facilities, is able to fill orders more promptly than ever.

One of the largest contracts for electrical material ever awarded has been given by the Rapid Transit Railroad, of New York City, to the Westinghouse Electric and Manufacturing Company, of Pittsburg, Pa. It is for the electrical equipment and sub-station apparatus of the underground road, and calls for the following apparatus: Six 5,000-Kw. alternators, 3 250-Kw. exciters, 26 1,500-Kw. rotary converters, 78 550-Kw. transformers and 8 motor generator starting sets. John B. McDonald, contractor for the tunnel, has gone to Europe, and, with August Belmont, president of the Rapid Transit Construction Company, and E. P. Bryan, general manager of the railroad, will spend a month in Europe studying the underground systems of Glasgow, London, Budapest and Paris.

The Abendroth & Root Manufacturing Company, whose plant in Brooklyn, N. Y., was recently destroyed by fire, instead of rebuilding the old works, will, it is stated, add extensively to the plant of the Wright Steam Engine Company, at Newburg, N. Y., which it has taken. The Abendroth & Root Company has also taken over the entire equipment of patterns, drawings and machinery of the Newburg plant. An additional building covering about 30,000 sq. ft. of area will be erected, in which the concern contemplates making its regular line of water-tube boilers, spiral riveted pipe, etc., will be in a position to build the Wright engine, and will also install the proper machinery for the manufacture of straight riveted pipe and for building, tank, steel stack and flue work.

The new Canadian plant of the Pittsburg Reduction Company is ready for operation, and the company will try to secure an export trade with Great Britain. At first the crude aluminum will be exported, but later it is expected that a rolling mill similar to that at New Kensington, Pa., will be built near the new works. The total cost of the present plant has been about $1,000,000. The Pittsburg Company began the erection of these works on the St. Maurice River, about 18 miles above Three Rivers, about 2 years ago. The company now has about 10,000 H. P. installed and will manufacture about 10 tons of aluminum daily. This will be shipped or exported down the St. Lawrence. No systematic effort has heretofore been made by the Pittsburg Company to enter the export trade. The plant is not nearly as large as that at Niagara Falls, but it is well equipped with electrical apparatus made by the Westinghouse Electric and Manufacturing Company, of East Pittsburg, Pa. The electrical furnaces were built by Alexander Laughlin, of Pittsburg.

The International Salt Company has been incorporated under the laws of New Jersey, with a capitalization of $30,000,000, and authority to issue bonds to the amount of $12,000,000. The company purposes to manufacture and sell salt and to acquire securities of other corporations in the salt business. It is proposed to acquire immediately the securities of the National Salt Company and its constituent concerns and of the Retsof Mining Company, and subsequently to acquire the securities of salt producing and distributing properties in Canada and Great Britain. A circular to National Salt stockholders gives the following basis for the exchange of stock: For 10 shares of National Salt preferred stock, one $1,000 50-year 5% gold bond of the International Salt Company and one share of the capital stock of the International Salt Company.

For one share of National Salt common stock, one share of the capital stock of the International Salt Company. These bonds will be first and consolidated mortgage collateral trust bonds, $7,500,000 of which will be used in this exchange and $4,500,000, the balance of the issue, will remain in the company's treasury. The basis of exchange for Retsof securities is for $1,000 of Retsof bonds, $1,000 of International Salt bonds, and $100 at par of International Salt stock.

TRADE CATALOGUES.

The Norristown Covering Company, Limited, of which Phelps Brothers, of New York City, are wholesale agents, has issued a little illustrated pamphlet describing the coverings it manufactures for steam pipes and boilers, hot air pipes, etc. The company also makes asbestos cements, mineral wool, asbestos paper and millboard, etc.

The "Pacific Coast Miner" has issued for distribution at Buffalo a finely illustrated special edition of 88 pages, with an attractive cover. The mining and mineral field of the State is ably covered in a series of interesting articles by prominent mining men. The pamphlet is sent out separate from the regular edition and is pronounced the finest special edition of a mining paper yet issued in California.

The San Francisco Bridge Company, San Francisco, Cal., and the New York Dredging Company, of New York City, have issued an attractive and neatly illustrated catalogue of 56 pages. The companies contract for railway and highway bridges, piers, docks, coal bunkers, steel structural work, flumes, dams, pipe lines, dredging, etc. The illustrations give a good idea of the size of some of the contracts taken by the companies.

The great and rapid growth of industrial activity about the junction of the Allegheny and Monongahela rivers and the present prosperity of the cities that have arisen there are set forth at length in an interesting pamphlet published by the "American Manufacturer" for distribution at the Pan-American Exposition. The volume contains numerous illustrations and a great amount of information about the resources, transportation facilities, manufactures, etc., of Greater Pittsburg.

A little "blue book" of 52 pages, published by the American Manufacturing Company, of New York City, appears in a second edition. The booklet points out the necessary qualities of a good transmission rope and the advantage of a rope drive in power transmission. The comparative advantages of the American and English systems of rope driving are discussed, and the problems to be solved in installing a rope drive are discussed. Attention is called to the importance of a properly splicing transmission and the correct method is described in detail.

The merits of metallic packing are described in attractive little pamphlets issued by the United States Metallic Packing Company, of Philadelphia, Pa. The company states that it makes a specialty of packing valve stems and piston rods on steam engines for all temperatures and pressures of steam. The main success of the company's packing is claimed to be due to its flexibility, owing to a combination of a ball joint with the sliding face of a vibrating cup, thus permitting the packing to float with the rod and offer very little resistance. The company makes packing for locomotives and stationary and marine engines.

A mining directory to cover the entire United States is being published by Geo. E. Vigoreoux Company, of New York City, and will be ready for distribution on November 1st. It is termed the "American Mines Annual," and will, the publishers state, contain nearly 5,000 names of active gold, silver, copper, lead and zinc mining companies throughout this country. It is to contain the name, location, names of executive officers, capitalization and main business address of each company, together with the of superintendent or manager thereof. The companies are arranged in alphabetical order, and the volume will contain about 300 pages.

The Cyclone Drilling Machine Company, of Orrville, O., manufacturing prospecting machinery for coal, oil, gas and placer deposits, has issued an illustrated 20-page pamphlet with a brilliant purple cover. The "Cyclone" machine is made in several sizes and styles to be used with the company's hollow rods system and can, it is stated, be run by horse-power, steam or gasoline. The hollow rods are said to keep a perfectly clean hole at a speed of 90 to 120 rods per minute, to make much faster progress than is possible with solid rods at depths of 500 ft. or less. The company carries in stock boilers, engines, pumps, pipe and well supplies.

The objects and advantages of the magnetic dressing of ores are set forth in a 12-page pamphlet published by Mechernicher Bergwerk, of Frankfort, Germany, of which L. Vogelstein, of 64 William street, New York, is American representative. The Mechernich concentrator is stated to be composed essentially of 2 horizontal bar electromagnets, mounted parallel, the upper being cylindrical, the lower cylindrical or semi-cylindrical. The crushed ore is fed by an inclined plane between the poles of the machine. It is stated that no conveyors or belts are required and that the magnets are enclosed, reducing the annoyance from dust. The company is preparing to test the process in foreign countries.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods of any kind, and shall be pleased to furnish them information, catalogues, etc.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, and have no pecuniary interest in buying and selling goods of any kind.

GENERAL MINING NEWS.

ARIZONA.

Mohave County.

(From Our Special Correspondent.)

The outlook for mining about Chloride the coming winter is bright. Many new mining enterprises have been started.

Elkhart.—J. M. Scratton, the new manager of this mine, near Chloride, is running cross-cuts and sinking the main shaft with the intention of sinking 1,500 ft. Lack of water has this fall prevented the mill from starting, but prospecting for a supply is under way in the canyon above the mine. Rich silver ore is coming from 3 places in the underground workings.

Leland and Mitchell.—Thomas Ewing, of Los Angeles, has purchased these mines from J. H. West and Steve Bedell. The mines are in the San Francisco District near Kingman, and are said to contain large bodies of high-grade ores.

Minnesota.—The new mill building at Chloride is up and work is rushed to get the new machinery in operation by November 1st. In addition to the men busy on the building and about the yards, a large force is also engaged in development in the mine. The main vein is 2 ft. wide, which carries values in gold, silver, copper and lead. The mine shaft is down over 300 ft., and still sinking, with 3 8-hour shifts. The Philadelphia & Arizona Mining Company intends to sink to 1,500 ft. The deep well to supply water for the concentrator has struck a large flow.

San Francisco District.—At the Gold Roads Mine new machinery will be installed and development work started on a large scale. It is considered a good property.

The Treadwell Mine, owned by a St. Louis company, has been worked since last April and good ore bodies have been developed.

On the O'Leary Mine development work is progressing rapidly. The Leland & Mitchell group, owned by Thos. Ewing, is showing large bodies of low-grade ore.

Schuylkill.—This company has its mines in shape for the winter and employs over 40 men. Work is under way on 2 shafts, which the company proposes to sink 1,000 ft. The shafts have lately been equipped with air-compressors and power drills, and sinking is at the rate of 3 ft. a shift. Ore is coming from the shafts, and the stations that are being cut every 50 or 100 ft.

Santa Cruz County.

Arizona Gold and Copper Company.—The company is to erect near its smelter at Patagonia a sampling works, for which Manager Geo. W. Crowe recently bought the necessary machinery in Denver. Lloyd B. Wilson, of New York, is president of the company.

CALIFORNIA.

State Mining Bureau.—Bulletin No. 22 is now ready for distribution, and will be mailed on receipt of 7c. It shows the mineral productions of California for the past 14 years.

In the labor department, mine owners are taking advantage of the opportunity of obtaining help. Under the system adopted, this department does not in any way come into competition with the local employment agencies, and in many respects will be of benefit to them.

Various schools throughout the State are deriving benefit from the mining bureau, as duplicate samples of ore are made into small collections and sent to them for the use of students.

A gold medal is now on exhibition in the museum, which was awarded to the California State Mining Bureau for the finest collection of minerals exhibited at the recent Paris Exposition.

The Bureau, through W. S. Keyes, has received as a donation a beautiful model of the underground workings of the W. Y. O. D. Mine, near Grass Valley.

Amador County.

(From Our Special Correspondent.)

Balliol.—At this mine, east of Sutter Creek, the main shaft, now down 800 ft., is to be sunk to the 1,200 ft., while on the east vein a shaft is down 400 ft. Three shifts are working in both shafts. The 40-stamp mill is idle.

Central Eureka.—The shaft is now down about 2,000 ft. and stoping and drifting are going on. The 1,600-ft. level is being pushed to connect with the South Eureka workings. The work is chiefly development. About 75 men are employed.

Fritzell & Evans.—Arrangements are being made to start work at this gravel mine on Rancheria Creek. Several buildings are completed and the roller mill, of 250 tons capacity, is nearly ready. Fifteen men are digging ditches and laying pipe.

Kankakee.—The tunnel run on this property in the Pioneer District is now 120 ft. from the surface. Some ore taken out assays as high as $50 per ton.

Keystone.—Sinking goes on rapidly, the management intending to go down 100 ft. more. Rich rock is being brought up from the 200-ft. level.

South Mayflower.—The old shaft at this mine at Amador City, which has reached a depth of 1,250 ft., will be continued to the 2,000 ft. On the 800 ft. prospecting is going on, promising results. C. R. Downs is superintendent.

Butte County.

(From Our Special Correspondent.)

Feather River Exploration Company.—This company has paid a dividend of $2 per share. This is the pioneer dredging company on the Feather River and is working several large dredges 6 miles below Oroville.

Calaveras County.

(From Our Special Correspondent.)

Oriole.—E. K. Stevenot, superintendent of this mine southeast of Angels, reports that crosscutting at the 400 and 500-ft. levels is in progress and that 60 ft. from the shaft on the 400-ft. the ledge showing free gold has been struck.

Utica Mining Company.—This company has about 40 men at work repairing the old reservoir on Stanislaus River near Blood's. The structure is backed by a new cement wall. A small force of men is raising the dam at Elephant Rock reservoir, a few miles further upstream.

Kern County.

(From Our Special Correspondent.)

Alameda.—Ore is being shipped from this mine at Randsburg. Twelve tons milled at the Kenyon Mill yielded $72 per ton.

Butte.—Seventy-six and one-half tons of ore from this mine milled at the Red Dog Mill yielded $62 per ton.

Dean & Jones.—The 20-stamp mill in the Slate Range has been overhauled. Thirty-five men are at work in the mine.

Keyes.—This old mine, 9 miles southwest of Kernville, has been reopened by Walker Brothers, who, during the past 2 years, have sunk to 260 ft. A drift on the old pay shoot shows ore worth about $100 per ton. The ore from the development work alone has more than paid expenses, without any stoping.

Nevada County.

(From Our Special Correspondent.)

Electrical Mining Company.—This company is preparing to work its mines on Osborne Hill, 3 miles south of Grass Valley, on a large scale, and will arrange to run the plant by either electric or steam power. Both will be installed so in case either breaks down the other can be used. D. Coughlin is superintendent.

Kate Hayes.—This old mine near San Juan, now owned by the Grass Valley Exploration Company, is to be reopened and developed, work having already begun. The Crescent Mine, an adjoining property, will be worked through the Kate Hayes shaft.

Nevada County Miners' Association.—The association has re-elected the old officers, as follows: President, Fred Zeitler; vice-president, Geo. Mainhart, Sr.; secretary, W. F. Englebright; assistant secretary, J. F. Colley; treasurer, B. F. Snell. The following executive committee has been appointed: Nevada City, William Griffin, B. S. Rector; Grass Valley, D. B. Marwick, F. G. Beaty; Bridgeport, J. S. McBride; Washington, E. T. Worthley; Eureka, P. S. Waldron; You Bet, Jerry Goodwin; Meadow Lake, C. F. McGlashan; North Bloomfield, L. L. Myers; Rough and Ready, John C. Grant. This committee will appoint delegates from the various townships to the annual convention of the California Miners' Association at Nevada City, October 21st.

Pine Hill.—This mine in the Lime Kiln District is to be opened up by a New York company under the management of Superintendent Milliken. The 30-ft. ledge assays about $6 per ton.

Union Blue Gravel.—A steam hoist has been shipped to this mine near Nevada City and the company is preparing to start work.

Shasta County.

(From Our Special Correspondent.)

Bully Hill Smelter.—From this smelter, which has been in operation 4 months, 50 carloads of copper bullion have been hauled to the railway station at Bella Vista, and probably 20 car-loads more are at the smelter. Each carload is about 20 tons. The bullion is said to carry high values in gold and silver.

Kosk Creek Copper.—This group of 40 claims on Kosk Creek is reported bonded to San Francisco people, who have sent in tools and supplies and started work on a prospect shaft with a force of 10 men. The camp is being put in shape for the winter. The croppings on this belt show considerable native copper.

Northern Light.—This mine in the Bully Hill District has been bonded for $75,000 to Geo. Von Staden, representing Eastern capital. Supplies and machinery have been sent in and a force of men put at work.

Trinity Copper Company.—It is reported that copper ore has been struck in the lower tunnel of the Shasta King. For several months about 60 men have been employed at the mine and a force has been driving the lower tunnel. H. A. Keller has been re-elected general manager.

Siskiyou County.

(From Our Special Correspondent.)

Several rich copper prospects have been located in the Joe Creek District on the west side of this county. The creek is a tributary of Elliot Creek and extends into the Red Hills several miles south of the Oregon line. The McVey copper mines were discovered here some time ago.

Cherry Hill.—The new tunnel is being driven as fast as possible. The air compressor and receiver are set up and air pipes are being laid into the tunnel. The rock is very hard, so that only 2 ft. per day has been made with hand drills. Buildings have been erected and everything prepared for the winter. Work continues in the upper works and in No. 3 tunnel ore has been cut which assays from $20 to $40 per ton.

New Pine.—This claim at Oak Bar is worked by a Detroit Company, which is building a 1½-mile ditch for a newly invented hydraulic process. The adjoining ground has produced as high as $25,000 in one season.

Trinity County.

(From Our Special Correspondent.)

Brown Bear.—At this mine at Deadwood work is pushed on the upraise from the long lower tunnel which failed to tap the pay shoot. A 6 months' supply of ore is said to be in sight.

Jumper.—This mine near Stent has reduced its working force on account of a scarcity of water. The mill is being repaired and the New Era shaft will be retimbered.

Lappin.—The large Dow steam pump, with a capacity of 1,200 gals. per minute, is on the way to this mine at Deadwood.

Mooney Consolidated Mining Company.—This company is operating a hydraulic claim on the Trinity River, near Lewiston. Some large nuggets have been taken out.

Red Rose.—At this mine on Upper Coffee Creek 60 men are employed on development and 2 10-ton Huntington mills have been ordered. A sawmill is also on the way to the mine. About 300 ft. of work has already been done, exposing a well-defined ledge of high-grade ore from 1 to 5 ft. wide.

Tuolumne County.

(From Our Special Correspondent.)

Bonanza.—This mine on Piety Hill has produced $2,000,000. The shaft is down 2,000 ft. and the mine is well equipped with steam and water power, driving 2 powerful air compressors. The mill consists of 4 heavy stamps, with concentrators, etc.

Columbia Marble Quarry.—The suit in regard to this property has been settled and Messrs. Jarbee, Crooks, Bannister and Hersfield are making arrangements to resume operations. An electrical plant is to be installed. W. B. Bannister is superintendent.

Golden Gate.—This property has produced almost $2,000,000 since it opened. The main shaft is down 700 ft., and the drifts, raises, winzes, tunnels and stopes will measure over 10,000 ft. The mine is 1 mile southwest from Sonora.

COLORADO.

Boulder County.

Delano.—This mill, with offices, ore houses and other buildings near Boulder was destroyed by fire October 8th, causing a heavy loss, partly insured. The mill was owned by Rhode Island men.

Magnolia Mill.—This new plant at Magnolia, employing the Greenwalt electro-chlorination process, is nearly completed and is expected to be handling ore soon. Ore will be taken from the Columbia group of claims. J. R. Meiklejohn, ex-Assistant Secretary of War, and Iowa men are interested. John H. Kemp is superintendent and O. S. Blakeslee, of Middletown, Conn., will be assistant superintendent and electrician. The new works will have an initial capacity of 50 tons a day.

Clear Creek County.

(From Our Special Correspondent.)

Crown.—This property near the Lamartine is to be opened by C. A. Gehrmann and Henry P. Lowe, of Denver.

Dover Mining Company.—This company of Pittsburg, Pa., men, operating at Idaho Springs, has purchased the Donaldson Mill, adjoining the Dover Mine.

East Argentine.—A number of discoveries of very rich silver ore have been made near the Continental divide during the past few months. Drifts run prove some extensive shoots. A great number of locations have been made. Several tunnels are projected, as they will gain depth rapidly.

Franklin.—It is said that this property at Idaho Springs will be reorganized and machinery installed. It is to be worked in connection with the Silver Age. In the adit level 2½ ft. of ore running $40 net has been drifted on for 110 ft. with no sign of a pinch. A drift is to be run from the Newhouse Tunnel east for 2,000 ft., to catch this shoot 2,000 ft. below surface.

Gold Medal.—This mine, near Idaho Springs, has been sold to Denver people, for a consideration reported as $50,000. The claim is on the big vein of Seaton Mountain, and when worked at the surface produced milling and smelting ore.

Great Republic.—Manager Strum, of this Empire property, is letting contracts to drive the adit. Boarding houses are being erected.

Mendota.—In drifting in this mine at Silver Plume, at a depth of 900 ft. the pay streak increased from 18 in. to 4 ft. of smelting ore.

Ninety-four Tunnel.—A contract is to be let in this tunnel at Yankee Hill. It is in 800 ft. and opened up the Stonewall Vein, which supplies the mill with ore.

Red Oaks Company.—On the Sunburst Claim of this Georgetown mine a streak of 3 ft. ore, is reported to run 140 oz. silver and 140% lead.

Fremont County.

Ocean Wave Coal Company.—This company has been organized by S. P. Smith, Sr., S. P. Smith, Jr., and Charles Cowan, of Coal Creek and Williamsburg. The mine is situated near Williamsburg, on both the Santa Fe and Rio Grande roads. The land comprises over 200 acres and carries 2 seams of coal. The output now exceeds 400 tons a day. More entries are being driven and the output will be increased to 600 tons a day. The product is already contracted for. The main slope has been driven 1,200 ft., but the mine has only been worked 600 ft. from the mouth. About 100 men are taking out coal and 50 more will be added.

Gilpin County.

(From Our Special Correspondent.)

Mining Deeds and Transfers.—G. W. Pierce to L. and S. Sterulberger, 1-6 interest in Minnesota Lode in Russell District; W. Hotchkiss to J. R. Blaine, et al., Syndicate and Sabin lodes in Central District; Wm. Kittle, et al., to Blue Grass Mining Company, interest in Decoration Lode, Phoenix District; John Owen to James E. Wallis, the Morning Star in Pleasant Valley District; Estella Truenell to E. A. Chapman, ¼ interest Pet Lode, Silver Lake District; H. Granfield to Hanover Investment Company, the Jack Lode in Pine District; J. H. Le Moyne to A. A. Pope, et al., the Telegraph and Telephone lodes in Russell District, Bouvier Lode in Illinois Central District, and Hot Pot Lode in Virginia District; J. McMillan, et al., to Delmonico Gold Mining Company, assignment of lease and land on Delmonico Lode in Illinois-Central District; C. Cesario to A. Cesario, the Lombard Lode in Vermilion District; J. D. Diffenbaugh to C. Hawn, ½ interest in Smuggler and Mark Hanna lodes, Independent District; C. S. Risley, trustee, to Boston Occidental Mining Company, 99-100 interest in Mascot Group of 5 claims in Pine District, for a consideration of $10,000.

Gilpin Ore Shipments.—The shipments of ores, tailings and concentrates from Black Hawk Station in September were 309 cars, or 5,667 tons, a satisfactory increase over September, 1900.

Barnes.—The Horseshoe Mining Company is increasing its shipments. The product averages from 10 to 15 tons daily of concentrating and smelting ores. Milwaukee parties are the owners, with Vic H. Scheuer, Central City, manager.

City of Brooklyn.—Massachusetts men are interested in this claim in Vermilion District, and are going to put up machinery. H. H. Hall, Yankee, will be in charge.

Hampton.—This property is being operated by W. H. Chittenden, of Denver, under lease and bond, with N. C. Hughes, of Central City, as manager. Ore is being taken out at 250 and 300 ft., running from $35 to $50 per ton for concentrating ores, the smelting ore giving $75 to $100 per ton. The ore is enarzite. A gasoline plant and a shaft building will be put up.

Gunnison County.

Black Queen.—J. H. Scott and E. L. Ogden, of Aspen, who are working this mine on Sheep Mountain under lease, are shipping good silver ore to Denver. The lower grade ore is packed to the Hoffman Smelter at Marble. The mine is owned by the Crystal River Mining Company, of Chilicothe, Mo.

Goodhope.—Some very rich gold ore is being shipped from this mine near Vulcan. Drifting is under way at 500 ft. depth.

Mineral Point Mining Company.—This company owns the Hoffman 70-ton smelter at Marble. The company is operating the Laura Tunnel in Snow Mass Basin, which shows a vein of copper and lead, and is now in 1,000 ft. The company is driving the Carbonate Tunnel on Crystal Mountain, and has it in 300 ft. The vein carries copper. This is the first exclusive copper showing opened in the district. A jack train transports the ore to the Marble Smelter. The company is also operating the Eureka, on Treasury Mountain, at an elevation of 13,000 ft. A tunnel gives 300 ft. of stoping ground. The ore carries $35 in copper and lead.

Vulcan Mining Company.—This company is unwatering the 400-ft. shaft on the Vulcan Mine, adjoining the Goodhope.

Lake County—Leadville.

(From Our Special Correspondent.)

Arnold Leasing and Mining Company.—On the Rose-Emmet Group, on Carbonate Hill, at 745 ft., a fine pumping plant is being installed. Work has been pushed for some months, and the indications warrant the extra expense.

Bohn Mining Company.—Before sinking the company is prospecting from the bottom of the shaft with a diamond drill.

California Gulch Mining Company.—The stockholders have decided that with $5,000 the presence or absence of ore above the 445-ft.—the water level—can be determined, and sufficient stock at 10c. a share will be sold to raise this amount. Work will resume soon. Almost $70,000 have already been spent in prospecting, a fight with water causing much difficulty.

Chippewa Mining and Leasing Company.—The main shaft has been sunk another 100 ft. and a drift is started to catch the body.

Clara Bell.—Frank Herbert, owner of this mine, has taken a retort from a 10 days' clean-up to Deadwood, worth $1,500. This was from a Tremain mill. The ore is plating about $20 per ton. The tailings are carefully saved.

Evelyn Mining Company.—In this new Graham Park shaft, where a fine sulphide body has been encountered, a very large plant of new machinery is being put in place, and this will be followed by sinking a further depth of 50 ft. in order to better open up the ore.

Leadville Ore Output.—The American Smelting and Refining Company handled 60,000 tons of ore from the Leadville District during September. In addition there were shipped 2,500 tons of zinc and copper sulphides to outside smelters and about 7,500 tons of manganese, making the total production 70,000 tons, with an estimated value of $1,100,000. While the present weekly shipments show a decrease in sulphide tonnage, there is a gain in iron tonnage.

Mammoth Group.—Lessees on this Breece Hill territory have the Old Monarch Shaft retimbered and are drifting on the upper contact.

Mayr Mining Company.—This company, backed by Chicago men, has sunk the old White Cap Shaft on Iron Hill over 700 ft., and is now drifting at the 700-ft., following a streak of sulphide.

Rex.—Pittsburg people are at the head of the new Keystone Mining Company, which is to operate this proposition in Iowa Gulch. The group consists of 65 acres. In the Rex shaft gold ore was struck in a drill hole at 350 ft. Chas. Stevenson, of Pittsburg, is here representing the Eastern stockholders.

San Miguel County.

(From Our Special Correspondent.)

Keystone Hydraulic Mining Company.—This company has put in over 1,000 ft. of sluice boxing and is now washing a 25-ft. face of gravel. Electric lights enable the 8-in. giant to run at night. Robert Casey, of Telluride, is resident manager.

London-Badger.—This company at Ophir recently let a contract for driving the Hathaway Tunnel 1,000 ft., 860 ft. being already driven. Electric drills will be used. The extension will intersect all the company's 6 patented claims, and reach the side line of the Globe-Suffolk holdings. Large bodies of concentrating ore will be opened and a plant suitable for its treatment will be erected next spring. A. T. Hathaway, Telluride, is manager.

Summit County.

Gold Run Mining and Milling Company.—This company at Breckenridge is driving a tunnel 7 by 7 ft. and has put in a large Connelsville blower driven by electricity supplied by one of the Breckenridge electric plants. With two shafts at work it is expected that the tunnel will advance at the rate of 4 ft. per day. It is to have an ultimate length of 3,000 ft. Colonel Lightburn and others, of Cripple Creek, are interested.

Jessie.—This property at Breckenridge has resumed work on company account. The property has been developed under supervision of W. L. Wilson. It is estimated that there are 2,000 tons of good grade milling ore stored in the drifts and bottoms of the stopes, ready for tramming to the 40-stamp mill. The mill will handle from 80 to 100 tons per 24 hours.

Teller County—Cripple Creek.

(From Our Special Correspondent.)

Isabella Gold Mining Company.—This company has practically abandoned work in the 14th level, the reason given being that no ore in marketable quantities has been found there. As the company has a large amount of undeveloped property, it was thought best to do some exploring where the expense was not so great. It is understood that a fair number of men will be kept at work, though the working force is now 1 shift per day. This action, though discouraging, is not as bad is it appears at first sight, for the company's property is in an excellent location.

El Paso Consolidated Gold Mining Company.—It is understood that a new 3-compartment shaft is to be sunk before long, near the old one. The shaft will be equipped with a large first motion hoist and a new compressor. The condition of the lower levels is said to warrant the expense. It is understood that developments show up exceedingly well on the lower level. The company is now the largest on Beacon Hill and has splendid prospects. The management has been very conservative.

Free Coinage Gold Mining Company.—W. C. Neville has been elected president to take the place of Samuel Strong, who was killed a short time ago. Mr. Martin was elected secretary. The rumor that a 12c. dividend would be declared has been confirmed. The company owns a good acreage on Bull Hill. It is a close corporation.

Golden Cycle Mining Company.—The new plant on the Legal Tender Mine is handling ore.

Hoosier Mining Company.—The output during September is reported to be about 200 tons, running 1 to 2 oz. gold to the ton. The property is on Tenderfoot Hill, and made quite a heavy production under lease to Mr. Anstie. It was the first mine of that section to ship ore in any quantity. Of late a large amount of development has been done, and the shaft is reported down between 400 and 500 ft. The property is owned by the Grafton Gold Mining Company.

Mary McKinney Mining Company.—This company declared its usual quarterly dividend of 3c. per share. The company owns ground adjoining the Anaconda and is one of the greatest mines in the district. The depth attained is over 500 ft., but the ore shoot is one of the longest in the district.

IDAHO.

Ada County.

Homestake.—The buildings for the 10-ton cyanide plant of this mine at Neal are up and the machinery will soon be installed. The plant will treat the concentrates. Heretofore the concentrates have been shipped to Omaha. A 10-stamp mill has been running for 6 years.

Bingham County.

Blackfoot Mining Company.—This company was organized recently at Mercur, Utah, for the purpose of developing the Golden Gate group of 3 claims, situated in Mt. Pisgah District. Geo. Z. Edwards is president; A. L. Castleman, vice-president; George W. Luft, secretary and treasurer, and Martin Mahnken and Ernest E. Ridges are the other directors. The capital stock is placed at $500,000, in $1 shares.

Elmore County.

Crown Point Gold Mining Company.—The company has given an option on its property to Stillman S. Kelly, of Boston, Mass. Under the terms of sale the company is to employ at least 10 men continuously on the property from now until August next, when, should further development prove satisfactory, Mr. Kelly will make the first payment of $60,000, and 2 years from then he is to pay the balance, $90,000. The group comprises 62 claims. Dan Reber, of Mountainhome, is to remain as superintendent for the company.

Idaho County.

Thunder Mountain District.—Further reports tend to confirm the stories of an important strike of high-grade gold ore in properties owned by Col. Dewey and others. A vein 5 to 7 ft. wide is said to be opened.

Owyhee County.

Afterthought.—Water recently drowned the miners out of the bottom of the 300-ft. shaft on this claim. Afterthought, belonging to Messrs. Davey, Huntley, et al., on Mahogany Flat, War Eagle Mountain, and the owners, after enlarging and re-timbering the shaft down to the 80-ft. level, are putting in a steam pump.

Banner.—Messrs Leonard & Grete have cut a shoot of high-grade ore 8 ft. wide in this claim on the west side of Coffee Gulch, Florida Mountain, near Dewey.

White Brothers.—Machinery is being taken from Flint for a 5-stamp concentrating mill at these mines in Twilight Gulch.

ILLINOIS.

Moultrie County.

Moultrie County Coal Company.—This company is now engaged in sinking a shaft at Lovington. The capital is $150,000, held by Joseph Stocks, A. R. Piper, L. G. Hostetter, J. C. McNight, C. W. Brown and S. P. Drake.

Sangamon County.

(From Our Special Correspondent.)

Republic Iron and Steel Company.—This company's coal mine at Springfield, known locally as the old North Shaft, which has been idle the greater part of the past summer, started up again on October 7th with the tail-rope haulage plant that has been installed. It is reported that the company will also start its rolling mill near the mine, which has been idle for 2 years or more.

INDIANA.

Green County.

Fry Coal and Mining Company.—This company has been organized at Jasonville, with a capital stock of $25,000. The 5 directors elected are: D. I. Sholts, Terre Haute; John Schafer, Clay City; Gilbert Fry, Dr. Selfrige and Mr. Campbell, of Jasonville. They elected the following officers: D. I. Sholts, president; Gilbert Fry, secretary and treasurer, and John Schafer, of Clay City, superintendent. Jasonville is situated about 25 miles southeast of Terre Haute, on the Southern Indiana Railroad. The Fry Shaft will be located ¼ mile east of Jasonville, near the tracks. The company has leased 500 acres of coal land underlaid by 3 veins, said to range in thickness from 4 to 7 ft.

Vigo County.

Woodland Valley Mining Company.—This Terre Haute company is sinking a 150-ft. shaft to the vein. The vein of cannel is 2½ ft. thick and the bituminous 5 ft. The company expects to be the first to place Terre Haute cannel coal on the market.

MICHIGAN.

Copper—Houghton County.

(From Our Special Correspondent.)

Atlantic.—The September output amounted to 240 tons of mineral.

Calumet & Hecla.—The remaining pumps in shafts Nos. 16 and 17, on the amygdaloid lode, are being taken out and the mine will be allowed to fill with water. Several carpenters, surface employees, etc., have been discharged during the past few weeks, and there is a general cutting down of the force.

Centennial.—President Fay is at the mine on his regular visit.

Hancock & Calumet Railroad.—The gauge of the road running between Lake Linden and Hancock is being widened and ballasted. About 1,600 tons of 80-lb. steel rails have been distributed along the right of way.

Mayflower.—A strong copper lode is reported cut at this property.

Old Colony.—In the tunnel on this property a very small force is employed and 1 Sullivan drill is used.

Oneco.—Exploratory work continues. A small force is employed in sinking a shaft on the outcrop of a lode.

Osceola.—Work at the South and North Kearsarge Shafts is well advanced, and the various improvements will be completed about the same time as the new stamp mill.

Quincy.—The September output amounted to 1,200 tons, as compared with 738 tons for September, 1900.

Tamarack.—It is expected that No. 5 Shaft will begin production in a few weeks. The foundation for the new Nordberg hoist, a duplicate of the one now in use, is nearly completed. Nos. 1 and 2 shafts are shipping very little rock from the Osceola Lode.

Wolverine.—The steel work on the new stamp mill building on the shore of Traverse Bay is far advanced, and work on the Mohawk mill will begin shortly. Several small dwellings have been erected for employees.

Copper—Keweenaw County.

(From Our Special Correspondent.)

Allouez.—The shaft on the Osceola amygdaloid lode is reported in good ground. Several small masses were taken out during the past month.

Mohawk.—The underground openings are being rapidly extended and the mill will start with ample territory for the proper selection of rock.

Copper—Ontonagon County.

(From Our Special Correspondent.)

The Minnesota syndicate which recently secured options on lands about 4 miles from the Winona Mine has a crew exploring for the Baltic Lode under the supervision of Capt. Thomas Buzzo.

Adventure.—Structural steel for the mill is arriving.

Belt.—Exploratory work continues. Considerable mass copper is being encountered.

Penn.—Pickands, Mather & Company have men exploring this property. An old shaft is being sunk.

Iron—Marquette Range.

Barasa.—The Donora Ore Mining Company of Duluth, a branch of the Union Steel Corporation, in which H. W. Oliver and H. C. Frick are interested, has taken a 90-day option upon this mine near Negaunee, with a view of purchasing the property. The Donora company has been in charge several days and is running a couple of diamond drills.

Michigamme.—The Cleveland Cliffs Company, which took hold of this old mine at Michigamme, 2 years ago, and spent considerable money overhauling the equipment and in underground exploration, has stopped work, as it could not find enough ore. A diamond drill has been at work

all summer. About 50,000 tons of ore were taken out, most of which is unsold and is stocked at the mine. Most of the ore came from bottom, where the vein was too narrow to pay for working.

Iron—Menominee Range.

Aragon.—At this mine near Norway the new No. 5 shaft is down 400 ft. It is 10 by 14 ft., with 4 compartments, including a cage-way 5 by 10 ft. for lowering men and timber, a pump and ladder compartment and 2 hoisting compartments. The shaft is in the hanging wall, and will be sunk 1,000 ft. before cross-cutting starts.

Forest.—This mine, near Iron Mountain, has been unwatered and a Worthington compound pump with a capacity of 1,200 gals. per minute is to be installed. The flow of water is 700 gals. per minute. At the 200 ft. a long cross-cut is being driven. About 10 men are busy underground under Superintendent Kruse.

Metropolitan.—At this old property at Metropolitan and at the Northwestern, adjoining, Geo. A. St. Clair has men busy exploring. The properties shipped considerable ore in 1880 and 1881, but have been long idle. Mr. St. Clair has also been exploring at the old Calumet location near Felch Mountain.

Millie.—This Iron Mountain mine has shipped 12,000 tons this year and has stopped. The ground is to be thoroughly explored by drifts and by diamond drilling. The company has been mining from the Chapin fee.

MINNESOTA.

(From Our Special Correspondent.)

September reports of ore shipments are: Duluth & Iron Range road, 740,611 tons; Duluth, Missabe & Northern road, 446,914 tons; Eastern Minnesota, 340,000 tons. To date the 3 roads have shipped a total of 8,200,000 tons. The entire shipment out of Lake Superior for September, including the ports of Ashland and Marquette, was 2,345,460 tons, and for the season to October 1st 12,236,260 tons. It is expected that the ore business of the year will be well over by November 15th to 20th. The port of Two Harbors will probably lead with a season total of about 4,500,000 gross tons.

The Duluth, Missabe & Northern has filed its annual statement with the State, showing gross earnings of $3,109,952, with a ratio of expenses to earnings of 48.69%. The road carried 3,830,424 tons of iron ore and 400,000 tons of other freight, chiefly timber and logs. The road's statement of cost of construction and equipment is $11,488,642, or $75.162 per mile. The freight earnings per mile of road were $19,428 and the passenger earnings were $622. The road employs 1,500 men.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Mineral rights have been granted to explorers for the town site of Chisholm, about 4 miles northeast of Hibbing. It is generally thought that nothing but float ore is there, but the explorers have paid out several thousand dollars in advance royalities and will explore at once.

Pettit & Robinson have leased 120 acres near Elba, part of it the town site of McKinley, to officials of the Republic Iron and Steel Company, who will explore at once. There is likely to be some ore in the location.

E. F. Sweeney and others have taken a number of tracts in the southern part of T. 59, R. 15, and will explore at once. They have most of the Stevens lands in this vicinity.

G. Stevens and S. B. Hill have leased to the Belliton Mining Company lands in sections 10, 11, 12, 15, 18, 22 and 33, T. 58, R. 20, for a term of 50 years and a royalty of 100,000 tons a year after the third season. M. L. Fay, of Virginia, is exploring near Biwabik with several drills. He hopes to find ore just south of the Canton, and there has one drill at work. He has secured 28 40-acre tracts.

An exploration carried on for some months in section 12, T. 57, R. 21, on a piece of land belonging to the State of Minnesota and leased by it at 25c. a ton, is reported to show an ore body at least 251 ft. thick, with the bottom not in sight. Part of this ore is of excellent grade.

Corrigan, McKinney & Company will remove their mining headquarters from Cleveland and Crystal Falls to Duluth, and will establish there their headquarters, purchasing agency, etc.

Elba Iron Company.—Fire partly destroyed the shaft house, but the water has been pumped out and mining resumed.

Fayal.—This mine at Eveleth has shipped about 1,275,000 gross tons for the year. It will continue to ship heavily for some weeks.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The price of zinc ore is higher than last week, while lead ore has remained unchanged. It is definitely learned that the Belgian smelters made an offer for 50,000 tons of American zinc ore, and it is stated on good authority that this offer was turned down by the Missouri & Kansas Zinc Miners' Association, as the price is said to have been too low. The Belgian representatives are now in Colorado, negotiating for Colorado zinc ore.

The top price paid for zinc ore during the past week was $24.50 for 60% assay, an advance of 50c. over the preceding week, and some ore assaying as much as 64% was settled for at $28.50 per ton. Lead ore remained unchanced at $23.25 per 1,000 lbs.

During the corresponding week of last year zinc ore's top price was $28 per ton in the bin, and lead ore's $23 per 1,000 lbs., delivered.

Following is the turn-in by camps of the Joplin District for the week ending October 5th:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	2,435,730	566,420	$43,616
Galena-Empire	963,400	136,120	14,244
Carterville	1,665,270	364,390	27,624
Oronogo	731,070	21,140	9,474
Aurora	585,890	10,240	6,356
Webb City	491,320	16,410	6,036
Carl Junction	330,440	.....	4,296
Neck City	317,020	.....	4,280
Carthage	345,890	.....	4,324
Granby	293,000	62,000	4,016
Zincite	196,900	.....	3,461
Central City	101,790	5,620	1,251
Spurgeon	192,890	63,640	3,599
Duenweg	223,720	32,860	3,337
Cave Springs	64,560	10,080	1,007
Sherwood	118,060	.....	1,117
Roaring Springs	39,540	6,900	753
Stotts City	47,490	.....	570
Wentworth	44,000	.....	572
Total	9,188,070	1,295,820	$140,232
Total, 40 weeks	385,625,630	43,204,990	6,271,921

Zinc value for week, $110,100; lead, $30,132; zinc value 40 weeks, $5,208,488; lead, $1,063,433.

Land Owners' Combine.—An agitation has started among the mining men of the Missouri-Kansas zinc and lead belt to include the land owners among the operators or organize the land owners separately. At present the operators which compose the Missouri & Kansas Zinc Miners' Association have been unable to control the ore output as they desire. To organize the land owners would mean fewer members and a combine composed of men more able to cease operations whenever the sense of the organization should require. Almost all of the operators at present are lessees and are required to work continuously. The land owners, if in the organization, would be obliged to grant the request for a cessation of work.

Newton County.

(From Our Special Correspondent.)

Zinc and Lead Lands.—The extension of the new branch of the Missouri Pacific system, which has been surveyed from Scotland, Jasper County, to Granby, Newton County, will open up a section of mineral producing country which has never been touched. Preparations for the grading are going on.

MONTANA.

Beaverhead County.

Crystal Graphite Company.—This company is driving a tunnel on its property in Axe Canyon, near Dillon, to cut a vein believed to carry graphite. Pearl Smith is general manager.

Cascade County.

(From Our Special Correspondent.)

Queen of the Mountains.—This property at Neihart, belonging to John Webber, of Great Falls, is being examined by parties from Butte, who think of extending the main tunnel 1,000 ft.

Ripple Fraction.—Some of the richest ore ever shipped from Neihart is being mined and sent to the smelter at East Helena from this property. Shipments have been made which sample $1,000 in gold and 15,000 oz. silver to the ton.

Flathead County.

Blacktail Mining Company.—The machinery has been taken from Libby to the West Fisher for the 10-stamp mill, and it is expected that the mill will be in running order inside of 30 days and have a capacity of about 25 tons a day. The mine and mill will require about 20 men when in operation. The ore is of the same general character as in the other properties in the West Fisher. The general average of the values so far is about $8 gold per ton.

Fisher Creek Mining Company.—The machinery for this company's water plant recently arrived in Libby from Chicago and nearly all of it is at the mine. The company has an excavation for 10 additional stamps completed, and as soon as the machinery arrives these will be put in place and the present output of the mine will be doubled. Both night and day shifts are worked in the mill and enough ore is taken out of the mine during the day shift to keep the mill running the 24 hours.

Snowshoe.—This mine, near Libby, has been transferred from the Pacific Northwest Mining Company, of London, Eng., to D. P. Bowers. E. R. West, the company's manager at Dillon, acted as agent in the deal.

Granite County.

(From Our Special Correspondent.)

Lead King.—Robert Turrell has shipped a car of ore from this claim at Garnet assaying good gold and silver values. He is driving for the Crescent ore shoot.

Montana & Denver Reduction Company.—This company's mill at Beartown has been running the second-class ore of the Shamrock, Fair View, Lead King, and on ore of the Little Dandy, which claim belongs to the owner of the mill.

Red Cloud.—This property at Garnet has been working about 50 men steadily. The 10-stamp mill has only stopped for clean-ups,; shipments of concentrates from $140 to $200 gold per ton are going regularly to the Colorado Smelter at Butte. The vein is over 2 ft. wide.

Robert Emmett.—In sinking winzes from the tunnel at this mine, near Garnet, the ore is reported widened to 4 ft. Ten men are employed making excavations and roads for the new hoisting plant. By driving about 1,000 ft. from the face of the main Red Cloud tunnel, the ore shoot of the Robert Emmett will be reached, giving a back of 1,500 ft. The values so far are lower than at the Red Cloud, the average ore assaying only about $15 per ton at the Robert Emmett, against $22 at the Red Cloud.

Jefferson County.

(From Our Special Correspondent.)

Ada.—This mine at the head of Rocker Gulch, 12 miles from Basin, is operated under a lease by Joseph Smith, who, it is stated, is paying a royalty of 75% on the ore shipped.

Bell.—C. W. Fleming, the owner of this property in Warm Springs District, 7 miles from Clancy, has started tunnel 3. It is expected the ore body will be reached in about 500 ft. Thirty-five miners are employed. C. Dunwoody is foreman.

Bluebird.—This mine, joining the Penn Yan on the east, is under a $30,000 bond to Jenkings Brothers, who are reported to have 10 ft. of oxide ore averaging $25 per ton. Shipments are going to Tacoma.

Penn Yan.—This property, 5 miles west of Wickers, is being worked under a bond for $50,000 by Hammel & Edwards. Regular shipments of ore are made from a new shaft at the west end of the claim.

Lewis & Clarke County.

The suit between Ferdinand Dickert and Judge Krueger, of Newark, N. J., over the Big Dick, Anaconda and other claims on the Big Blackfoot at Silver Camp, has been compromised. A new company is to be organized, capitalized at $50,000 and incorporated under New Jersey laws. Of the capital stock Mr. Krueger will own 51 shares, Mr. Dickert 48 and Ferdinand Dickert, Jr., 1 share. A large amount of money has been spent in the development of the properties and 11 cars of ore shipped to the smelter at Helena are said to have averaged $85 per ton, showing 75 oz. silver, 1.6 oz. gold, 9.9% copper, 5% lead and 32% iron. These two properties are located 20 miles apart, both on the Big Blackfoot slope of the Rainy Range. The distance from railroad has been so great that only high grade ore could be shipped. Messrs. Krueger and Dickert have always contemplated the erection of reduction works near the property.

Christina Mining Company.—This company, which has been organized by R. A. Bell and others to develop a group of properties on Greenhorn Gulch, is pushing development. The Christina has a vein of iron and copper ore in places 48 ft. wide, averaging from 7 to 8% copper and 30% iron. There are streaks in it which run high in silver and gold.

(From Our Special Correspondent.)

Empire.—The new cyanide mill, built to treat the old accumulations of tailings from the 60-stamp mill, is expected to be in commission within a few days. The Empire property is in the hands of parties from the Lake Superior country, who are to work under a bond and are planning to do extensive devlopment on the 3 principal mines, the Smithfield, Whippowill and Empire.

Missoula County.

Vermillion.—This placer property, on Vermillion Creek, has changed hands, but the names of the purchasers have not been given out. The ground was owned by Thomas Rodda, A. D. Dorn and J. P. Anderson, and the price is said to have been $50,000. The deal was engineered by W. E. R. McDonald and a Mr. McQuade, of Butte. It is a hydraulic proposition and will be worked on an extensive scale next year.

White Cloud.—The 50-ton concentrator erected by Fred Melcher and Culbertson at this mine on Eight-Mile Creek, near Florence, 4 years ago, has been bought by F. J. Rowlands, of Butte, and is being dismantled.

Silver Bow County.

(From Our Special Correspondent.)

Amalgamated Copper Company.—This company has extended the Sunday closing rule to all of its mines in Butte, including those of the Anaconda, Boston & Montana, Parrott, Butte & Boston, Colorado and Washoe companies.

Pacific.—The Butte Exploration Company is cross-cutting in the Pacific Claim at a depth of 250 ft. and is to sink 100 ft. deeper.

Pennsylvania.—Arguments in the case involv-

ing this mine have been submitted to the State Supreme Court by the attorneys for the Boston & Montana and the Montana Ore Purchasing Company. The transcript of the record of the lower court, including 6,000 printed pages, the largest record of its kind ever filed, will be reviewed by the court before passing upon the order of the lower court.

Butte Mining Exchange.—Articles of incorporation have been filed to organize such a mining exchange, with a capital of $3,000 in 60 shares of $50 each. The incorporators are W. B. Hamilton, C. W. Clark, E. L. Whetmore, Sam. B. Martin, W. B. Thornton, Hugh I. Wilson, James T. Finlan, Earl V. McCune and J. V. Long. Only stocks of approved merit will be handled, the intention being to build up a reliable market.

Homestake Mining Company.—Drifting and cross-cutting are going forward on the 200-ft. level of the Honduras Claim of this company, situated 12 miles from Butte on Brown's Gulch. The lead is said to be 18 ft. wide on the lower level.

Sailor's Dream.—This property on Brown's Gulch is being examined by H. J. Schoemaker, who is experimenting on a treatment best suited for the ore, the principal value being gold, about 30% of which is free milling.

NEVADA.

Humboldt County.

Copper King Mining Company.—This company has been incorporated to work the King Copper Mines at Cottonwood, the Monarch Mine near Say's Place and the Anderson Claims on Star Mountain, all tributary to Lovelock. C. P. Anderson, of Boston, is president; W. H. Tyler, of Worcester, Mass., vice-president, and T. H. Lowe, general manager.

Washoe County.

(From Our Special Correspondent.)

Reno Star.—At this mine near Reno a 500-ton ore bin is being constructed at the site of the large mill that will soon be erected. The low-grade ores are to be cyanided and the high-grade shipped to the Selby Smelter.

NORTH CAROLINA.

Ashe County.

Ore Knob.—This copper mine has reopened after many years of idleness. About 100 men will be employed working the surface ore.

Swain County.

Southern Kaolin Mining Company, Limited.—This company has been organized at Detroit, Mich., for mining a large deposit in the mountains at Bryson City. The board of managers is composed of Harry C. Bulkley, chairman; David A. Wales, vice-chairman and general manager; Henry N. Brown, secretary; Charles A. Rathbone, treasurer; Robert L. Stanton, Wm. S. Vreeland and Frank D. Whitall. The capital stock is $30,000, with $20,000 paid in.

OREGON.

Grant County.

Prairie Diggins.—This quartz mine, near Canyon City, has been sold to E. J. Foster and W. F. Shaler, of Grass Valley, Mich.; M. D. Winder, of Spokane, and I. B. Hammond, of Portland. There are 5 claims. A new 20-stamp mill is now on the way to the property. George P. Mulcahy, of Spokane, engineered the deal.

Don Juan Group.—This group comprises 4 claims, owned by Thibault & Le Clare. It has about 1,000 ft. of development work and the 10-stamp mill is running full capacity. The ore is high grade, netting, it is said, about $15 on plates, while the concentrates run about $150 per ton. The mine employs 12 men, and is said to have 2,000 tons of ore blocked out. Mr. Le Clare is manager.

Josephine County.

The J. S. Sardy, High Bench and Goodnow placers on Cow Creek have been consolidated under one company, at the head of which is George J. Cole, of the Anaconda Lead Company. Five additional giants will be put to work.

J. W. Merrit, Peter Applegate and Con Leever are having the machinery for a stamp mill made at the Ashland Iron Works for their mines on Silk Creek.

Union County.

Cornucopia.—This group of 29 claims is owned by John E. Searles. The Union Companion Mine has a working tunnel of 1,000 ft., at the end of which is an incline shaft of 400 ft., with drifts at different levels following the vein. At the 300-ft. level the ledge is reported over 14 ft. wide and averaging $25. The company is steadily developing and blocking out ore and hauling it to the Union Companion Mill.

The Last Chance Claim is 2 miles from an elevation of 7,500 ft., and has a working tunnel 700 ft. long, and, at 100 ft., is an incline shaft of 200 ft. At the 200 level is a drain tunnel 800 ft. long. The upper tunnel is stoped about 500 ft. The 20-stamp mill has a Comet crusher, Challenge feeders, plates, 12 Frue vanners and 2 slime tables. It handles about 70 tons daily of Last Chance rock, averaging $15 at the batteries, and turns out about 6 tons of concentrates every 24 hours' run, valued at $200 to $250 per ton. The plates save about 30%, and the total saving is about 80%. About 2 miles below the mine an electric plant on Pine Creek contains 2 General Electric field generators, 2 induction motors run by a Pelton water wheel, generating 400 H. P., and supplies power for hoist, 100 H. P. dynamo running mill, and power for an Ingersoll-Sergeant air compressor, besides furnishing light. Capt. Alleine Case, of Cornucopia, is general manager.

PENNSYLVANIA.

Anthracite Coal.

Erie Coal Company.—The pumping station at No. 6 colliery at Pittston was destroyed by fire last week, and the washery has shut down in consequence.

Natalie Coal Company.—The 1,200 employees of this company at Shamokin struck last week because they wanted James Bateman, inside foreman, discharged.

North American Coal Company.—The sudden fall of part of a culm bank at this company's washery near William Penn last week killed 3 men and injured 5.

Philadelphia & Reading Coal and Iron Company.—This company is to rush to completion the shaft it is sinking at Coal Castle, from which all coal veins in the Heckschersville Valley will be tapped. The shaft is down 50 ft. and will have a depth of 1,000 ft. The output will be 1,200 tons per day.

Jersey.—The fire in this old mine of the Delaware, Lackawanna & Western Company is almost out. Shafts were sunk all around the burning coal. These were kept filled with water, and thus the fire was checked.

Pine Brook. This colliery of the Scranton Coal Company, near Scranton, closed down temporarily last week, owing to union miners refusing to work with non-union men. About 700 men and boys were thrown out of employment.

Bituminous Coal.

Thomas Barnes, the founder of Barnesboro, in Cambria County, has recently sold all his holdings in Cambria and Indiana counties. The consideration for the property in Cambria County was $93,578, and the purchaser was John Tucker Murdock, supposed to be acting for Eastern men familiar with the field.

Berwind-White Coal Mining Company.—E. J. Berwind, of this company, has bought coal lands in Conemaugh Township representing a total outlay of $24,743, as follows: John A. Noon, of Richland Township, $1,612; Henry P. Friedhoff, $1.575; Gustav Hanitsch, $1,982; Vincent Schellhammer, $5,748; Margaret Friedhoff, $1,200; William Muenchmeier, $989; Elizabeth Shaffer, $2,891, and Anthony Kohler, $8,718. The Cambria Steel Company has large holdings right among the lands bought by Mr. Berwind.

Pittsburg & Buffalo Company.—This company has awarded contracts for the opening of 6 new coal mines along the Baltimore & Ohio, Pittsburg & Lake Erie and the Pennsylvania railroads. Work is to start as early as possible.

Lebanon County.

Cornwall Iron Company.—This company, of Cornwall, Pa., has been incorporated with a capital of $600,000. The subscribers are Edward C. Freeman and R. Percy Alden, of Cornwall, and Isabel C. Freeman, of Washington, D. C.; Margaret C. Buckingham, of Washington, and Sarah C. Derby, of New York. The first three subscribers compose the board of directors. Eight hundred shares in the new company were made over to each of the directors in consideration of the transfer of the Bird Coleman furnaces, consisting of 2 blast furnaces, the machinery and equipment with the tract of land and appurtenances, the whole being valued at $360,000 and 596 additional shares were placed to the credit of each of the directors in consideration of the transfer of the North Cornwall furnace, consisting of one blast furnace and the necessary machinery, valued at $179,000.

SOUTH DAKOTA.

Lawrence County.

(From Our Special Correspondent.)

Spearfish Mining Company.—The lowest workings on this company's ground, 4 miles north of Deadwood, are but 30 ft. deep. Most of the ore is broken down in open cuts. A 2,500-ft. tramway has been built. Adjoining this company's property on the east and north is a large group that is being developed by W. O. Morrison and associates, of Colorado City, Colo., and Ed. Hanschka, of Deadwood. They are building a 200-ton cyanide plant.

Deadbroke.—It is announced that the cyanide plant at this mine, in Blacktail Gulch, is to be enlarged by R. M. Maloney, Sol Rosenthal, of Deadwood, and W. P. Williams, of Chicago, with other Chicago men.

TEXAS.

State Attorney-General C. K. Bell has rendered an opinion that a proposed combination or consolidation of a number of oil companies in the Beaumont District would be a violation of the laws; that its purposes were clearly in restraint of trade. It is understood that the wells of all the smaller companies were to be embraced in the proposed consolidation.

Brazoria County.

Oil is reported struck in a well 3½ miles northeast of Columbia, on property owned by the Equitable Mining Company, in which ex-Governor Hogg is interested. At Bryan Heights, near Velasco, 18 miles to the south, a strong flow of gas has been struck. The gas carries much sulphur and no attempt has been made to control the well.

UTAH.

Beaver County.

Horn Silver Company.—At the annual meeting in Salt Lake on October 1st 338,721 shares were represented, the largest representation ever noted. The old directors were unanimously elected—Allan C. Washington, Juan M. Ceballos, Theodore W. Moore and William R. Britton, of New York, and P. T. Farnsworth, John Sharp and James Sharp, of Salt Lake. A. C. Washington was again made president; Juan M. Ceballos, vice-president; P. T. Farnsworth, general manager, and Ambrose I. Harrison, of New York, secretary and treasurer. No reports were submitted, as they come at the end of the calendar year.

Box Elder County.

Little Jimmie Gold Mining and Milling Company.—This company has been organized at Salt Lake for the purpose of developing the Horn Silver Group of claims in Park Valley District, with a capital of $125,000 in 25c. shares. Edward McCarrick is president; G. L. Bemis, vice-president; A. H. Page, secretary and treasurer, and August Stein and Fred V. Dankowske are the other directors.

Juab County.

May Day.—Superintendent Matthews has materially increased the output of first-class ore at this mine at Eureka, owing to improvements in the mill. The west cross-cut on the 200-ft. level is furnishing a part of this, the bulk, however, coming from the 50 and 100-ft. levels. The mill will take about 75 tons per day when in complete operation.

Showers Consolidated.—Cross-cutting is under way at the 600-ft. level.

Uncle Sam Consolidated.—The company has declared a second dividend of 3c. a share. David Evans has resigned as manager, while remaning a member of the board of directors. James Chipman, treasurer of the company, is now manager.

Salt Lake County.

Consolidated Bingham.—The company is working a large force of men on the new railway spur and tramway to the Dalton & Lark, and has a force erecting buildings and getting ready for winter. In the tunnel and shaft workings the usual number of men are employed. Sam Levey is superintendent for the Western Exploration Company of Salt Lake.

Sampson-Yosemite.—This group is being developed by the Western Exploration Company of Salt Lake. The Sampson shaft has been put in fair condition to the 400-ft. mark. On the Yosemite men are extending the main tunnel.

Summit County.

California.—A drift on the intermediate level is in 18 ft. on a breast of ore 11 ft. high. The ore is said to show 40% lead, 21 oz. silver and 20% zinc. The mill is running 2 shifts and turning out 5 tons of concentrates daily.

Daly-West.—The directors of this great Park City mine last week decided to increase this month's dividend to 40c. per share. The mine is reported in fine condition. Vice-President J. D. Wood stated that a raise is being made to give connection between the 900 and 1,200-ft. levels and by January 1st the output is expected to be at least 50 tons a day more.

Marsac Mill.—The machinery at this plant at Park City has closed down, and the old plant will probably not run again. The higher grade tailings are practically cleaned up, and as the Ontario ores have been contracted for by the smelter company there is nothing for the plant to do.

Washington County.

Utah & Eastern Company.—The little smelter at the Dixie Mine near St. George produced 126 tons of copper bullion and matte in September. The mine is reported looking well. Grant Snyder is superintendent.

WASHINGTON.

Ferry County—Republic.

(From Our Special Correspondent.)

Black Tail.—Work on the new shaft is temporarily suspended on account of water.

Princess Maud.—Failing water supply for the boilers has necessitated temporarily closing the mine. The north drift on the 650-ft. level is in 123 ft., being 30 ft. on the pay shoot. The trustees have issued a circular, stating that the mine will be closed until the Republic & Grand Forks Railroad is finished. The circular states

that the company has secured a $6.50 per ton rate for freight and treatment charges for 2 years, provided no lower competitive rates are offered. The development work in the mine comprises 1,566 ft. The ore on the No. 3 level averaged $24.26 per ton, and that from the 4th level about $13 per ton. The mine is out of debt and the company claims $100,000 worth of ore in sight and $500 of assessment due but not collected.

Ruby Placer.—The result of a 60 days' clean-up by 3 men working on lease, now terminated, is $8 gross per day each man.

Wauconda Gold Mining Company.—The main cross-cut tunnel is in 857 ft. and drifting has started on a vein 750 ft. in. The discovery of native gold is reported. The test plant for the Rossman treatment process is nearing completion. A flume and 800-ft. tramway are under construction.

Stevens County.

Northport Smelter Strike.—The smelter company has been importing men from the Joplin District, Missouri, and has kept its furnaces as busy as for several weeks. It is said that the Smeltermen's Union is tiring of the long strike and that matters between the company and the strikers may be compromised soon.

FOREIGN MINING NEWS.

ASIA.

India—Mysore.

The output of the Kolar gold-fields for August is reported at 42,048 oz. crude, which is 715 oz. less than in the corresponding month last year. For the eight months ending August 31st the total output was 336,416 oz., against 325,279 oz. for the corresponding period in 1900; showing an increase of 11,137 oz., or 3.3%, this year. The total this year was equal to 302,774 oz. fine gold, or $6,258,339.

The production of the principal mines in August is reported as follows: Mysore, 13,798 oz.; Champion Reef, 13,110 oz.; Ooregum, 7,427 oz.; Nundydroog, 4,713 oz.; Balaghat, 1,655 oz. About 85% of the gold is recovered in the mill, and 15% by cyaniding tailings and slimes.

AUSTRALIA.

Tasmania.

Mount Lyell Mining Company.—This company reports for the four weeks ending September 18th a total of 20,126 tons ore crushed. The result was 758 tons blister copper, containing 749 tons fine copper, 45,052 oz. silver and 1,387 oz. gold. The average yield was therefore 3.77% copper, 2.24 oz. silver and 0.07 oz. gold to the ton of ore smelted.

MEXICO.

Sonora.

Calera.—An important strike of gold ore has been reported from this group of mines. The new mill has been shipped from Denver, Colo.

MINING STOCKS.

Complete quotations will be found on pages 480 and 481 of mining stocks listed and dealt in at:

Boston.	Salt Lake.	Montreal.
Colo. Springs.	San Francisco.	London.
New York.	Spokane.	Mexico.
Philadelphia.	St. Louis,	Paris.
	Toronto.	

New York. Oct. 11.

Copper stocks continued to sag, but at the close prices are fractionally stronger, as buying is better than selling. The present improvement in the metal market is responsible for more confidence in speculative circles. Amalgamated suffered most from the bear attacks. On Monday the stock was down to $83⅜, a price considerably below that at which large purchases were made only a short time ago. On Tuesday and Wednesday the price gained a little. In these three days over 200,000 shares changed hands. Practically the same causes that affected Amalgamated were manifest in Anaconda trading, as the interests are identical. From Monday to Wednesday nearly 12,000 shares of Anaconda were sold at lower prices than last week.

Some attention was paid to the coppers called on curb, especially Tennessee. This stock sold at $15@$14½ on trading in over 4,000 shares. Union, of North Carolina, made a sale at $4¾, but outsiders are not anxious buyers.

Ontario Silver, of Utah, continues to weaken on persistent selling of hundred-share lots. The price dropped from $12⅛ last week to $11¼ on Wednesday, October 9th.

Sales of Quicksilver common, of California, are noted at $3½@$3¾, and of the preferred at $10½. Comparatively few buyers are on the market for Brunswick Gold, which is offered at 8c.

In the Colorado group the Cripple Creek stocks have been unfavorably influenced by a smaller September output, and the discontinuance of work in the lower levels of Isabella. Many shares of this stock are held in the East, and so the heavy selling in the West has cut the price materially of late. This week 44c. was paid, the lowest in some weeks. The company paid its last dividend in March, amounting to 1c. per share, and making the total distribution since incorporation a little over 32c., or $724,500 on a capital of $2,250,000. Further dividends depend upon the development of the new territory owned by the company. A sale of Breece, of Leadville, is recorded at $1.50, showing strength. This company pays quarterly dividends of 5c. a share ($10,000), and has distributed to September $130,000 on a capital of $5,000,000.

The Comstock shares are quiet, owing to pending assessments. Consolidated California & Virginia is offered at $1.80, at which the last sale was reported.

Since the reduction in the dividend by Amalgamated Copper the stock of the Standard Oil Company dealt in on curb has suffered a heavy decline. On sales of less than 200 shares the price dropped to $675, or 90 points in a few weeks. Notwithstanding the belief of some brokers that insiders have purposely marked down the price to its present level, there is much theorizing on curb. So far this year Standard Oil paid $40 a share, while for the year 1900 it disbursed $48; in 1899, $33; in 1898, $30; in 1897, $33; in 1896, $31, and in the 5 years previous, $12 a year.

An auction sale is reported of 500 shares Virginia Copper Company, Limited, at $410 for the lot.

Boston. Oct. 10.

(From Our Special Correspondent.)

The market was exceptionally dull and narrow early in the week, and some parties inclined to a discouraging view of the situation. Later, however, there was a very considerable improvement and more interest was shown. A special movement in Mayflower and another in Guanajuato helped, the former stock going up to $4 and the latter to $8½. Amalgamated was wavering and uncertain, under the somewhat perplexing situation in copper.

Of course there are all sorts of explanations of the situation, and our oracles are putting out all kinds of views, some of them highly amusing, while others have some degree of plausibility. The plain view that the Amalgamated and its allies have control of the situation and mean to keep it does not seem to occur to our wise men.

To-day the market has been stronger all around. Some mining stocks showed a notable improvement, Tamarack gaining $15, Osceola $4½, Copper Rangeg $3½, and Mass $1½. On the other hand, Guanajuato dropped a little, selling at $8@$8¼; while Allouez also dropped, though for a special cause, the announcement of a $3 assessment. In other stocks there was little change. Mayflower was less in demand and sold at $4¼, while Old Colony brought $5. American Zinc sold at $10 and Mercur at $2¼.

Upon the whole, the prospect is for a stronger market, and matters look much better than they did a week ago.

Colorado Springs. Oct. 5.

(From Our Special Correspondent.)

The stock market is somewhat weaker, and nearly every day during the week the market seemed a trifle lower than on the day preceding, except on Saturday. The first days of the week there was slight demand for shares, and very little inclination to sell.

One of the principal features has been heavy trading in Isabella, and the rapid decline is thought by some brokers and others to be merely manipulation. Considering the strength of this stock during the last few weeks, the present movement comes as a surprise, although the fact that the upward movement was attributed to a bull scheme is given as an explanation of present weakness.

Although the undertone of the market was firm, trading has been somewhat dull, there being little demand except for the stock of mines. The market spirit is one more of timidity and fear than of absolute weakness, although the fear seems to affect buyers more than sellers. The principal features of the week are: Anaconda, Argentum Juniata, Dante, Doctor-Jack Pot, Elkton, El Paso, Gold Dollar, Isabella, Pharmacist, Pointer and Vindicator in the mines; Beacon Hill, Ajax, Ben Hur, Calera, Central, Eclipse, Missouri, Mollie Dwyer, Nellie V. and Sedan, in the preferred prospects; Aola, Gold Knob, Helen B., O. K., Shannon and Zoe in the prospects; Acacia, Blue Bell, Golden Eagle and Reno, in the unclassified.

Argentum Juniata has shown some activity, although declining very materially; it opened at 10c., declined to 6c., then advanced to and closed at 8c., under fair trading. Anaconda has shown a downward tendency and has been rather active; it opened at 29½c. and declined to 27c., and closed with light sales. Dante opened at 5c., declined to 3c., then advanced and closed at 4½c., under very light trading. Doctor-Jack Pot opened at 55c. and declined and closed at 52½c., under light trading. Elkton opened at $1.74 and declined and closed at $1.70. The mine is in excellent condition and the decline is attributed to the general weakness of the market. The sales were fairly good. El Paso has shown much activity and about the only stock to show a marked advance. It opened at 61c., declined to 59½c., and advanced and closed at 62¾c. bid, with 62⅞c. asked, with some sales at 63c. Gold Dollar has been active; it opened at 18¾c., declined to 18c. and advanced and closed at 18½c., under good trading. Isabella caused quite a sensation. It opened at 57c., declined to 40⅛c., then advanced and closed at 41c. The trading was very heavy, with a great deal of "shorting," about 200,000 shares changing hands. The cause of the big slump is attributed by some to the unsatisfactory condition of the mine in the lower levels, and by others to manipulation by the people controlling the stock. Pharmacist opened at 7¾c., declined to 7¼c., and closed at 7½c., under light sales. Pointer has been active this week, but declined, opening at 6½c., declining and closing at 6c. bid, with 6⅝c. asked, under fair trading. Vindicator opened at $1.15, advanced to $1.16½ and declined to $1.11 and closed under good trading.

Beacon Hill Ajax declined slightly, opening at 5¼c. and declining and closing at 4¾c., with fair sales. Ben Hur opened at 6½c., but declined and closed at 5⅝c. bid, with 6¾c. asked, under fair trading. Calera opened at 25½c., then advanced and closed at 26½c., under light trading. Central opened at 8¾c., declined to 8c., then advanced to 5⅝c. and closed at 8⅜c., under good trading. Eclipse opened at 11¾c. bid, declined to 11⅝c., then advanced to 11¾c. bid, with 12c. asked, under some trading. Missouri opened at 5¼c., but declined and closed at 4c., with very light sales. Mollie Dwyer opened at 7c., declined to 6¼c., then advanced and closed at 6½c., under fair trading. Nellie V. opened at 3c. bid, with 4½c. asked, advanced to 4⅛c., but declined and closed at 4c., under good trading. Sedan opened at 5⅝c., then declined and closed at 4⅜c. bid, 4⅝c. asked, with good sales.

Aola opened at 3½c., declined to 2⅞c. and closed at 3c., with light sales. Gold Knob opened at 5½c., advanced to 5⅝c. and closed at 5c. bid, with some sales. Helen B. opened at 3¾c., but declined and closed at 3¼c., under light trading. O. K. opened at 2c., declined to 1⅝c. and closed, with little trading. Shannon opened at 2c., declined to 1¼c., then advanced and closed at 1⅝c., with few sales. Zoe opened at 2¾c., then declined and closed at 2½c. bid, 2⅝c. asked, under light trading.

Acacia opened at 16c., declined to 15⅛c. and advanced and closed at 15⅞c., with light trading. Blue Bell opened at 15c., declined and closed at 12½c., with few sales. Golden Eagle opened at 2½c., declined and closed at 1½c. bid, 3c. asked, under very light trading. Reno opened at 2⅜c., then declined and closed at 1c. bid, with few sales.

The total amount of sales for the week was 1,877,584 shares, with a cash value of $332,605. The sales and cash value are both lighter than the preceding week.

San Francisco. Oct. 5.

(From Our Special Correspondent.)

The market has been quiet, with small trading, but generally a firmer tone. Prices were fairly well supported, but there was no special demand for stocks.

Some quotations noted are: Consolidated California & Virginia, $1.70; Ophir, 75c.; Silver Hill, 32c.; Challenge, 20c.; Mexican, 18c.; Hale & Norcross, 17c.; Choilar, 7c. One sale of Standard Consolidated was reported at $3.50.

The annual meeting of the Consolidated California & Virginia Mining Company has been called for Monday, October 21st.

The sales on regular call at the San Francisco Stock Exchange for the year to date compare as follows:

	1900.	1901.
January, shares	164,400	312,385
February	112,000	132,585
March	252,730	152,220
April	121,500	180,625
May	171,015	151,020
June	129,505	107,340
July	84,110	163,980
August	163,985	143,940
September	113,350	86,710
Total	1,312,595	1,430,805

September showed a heavy falling off from last year. The total business for the 9 months, however, shows an increase of 118,210 shares.

On the Producers' Oil Exchange business was somewhat quieter. There is a fair demand for stocks, but holders are not inclined to make concessions which buyers want. While sales were somewhat lighter, prices were firm.

Some prices noted are: Hanford, $103; Peerless, $5.37; Home, $3.45; Monte Cristo, $1.65; Reed Crude, 33c.; Sovereign, 25c.; Junction, 22@23c.; Monarch, 20@21c. Both Monarch and Junction were largely dealt in.

London. Oct. 1.

(From Our Special Correspondent.)

The London mining market has been principally occupied this week with various small speculations in connection with West African mines. A good many of the companies floated during the past year have now got into operation and exploring work is being prosecuted assiduously. Reports come to hand pretty frequently now of results of trial boreholes, but so far the results published are not very en-

couraging to the promoters. The cores do not assay more than about 10 dwts., a figure which is not sufficient to pay with the conditions of labor and climate to be met with there. Consequently the movements in shares have not been very active. South African shares have been quite inactive, owing to the renewed hostilities at the seat of war. West Australians are neglected.

The market in copper mining shares has again been full of fluctuations this week. Nobody here seems to know the reason for the continued fall in copper, and a very small proportion of the speculations in copper mining shares comes from this country. The activity is chiefly due to French speculators. The speculation in copper shares appears to be associated with similar operations in De Beers, a fact which shows that the movements have practically nothing to do with the mines or products. Various conjectures are made as to the reason for the fall in copper, one being that the Amalgamated Company is trying to force outside producers into their circle, and another that the same company is overloaded with stocks of copper. But as no one has the remotest shadow of actual knowledge these theories do not take us far.

The agitation over the Whitaker Wright collapse has for a time quieted down, and no doubt little will be heard of it until the Le Roi Company has received Mr. Frecheville's report. The shares in the company keep remarkably steady at about £7 10s. per £5 share, in spite of many adverse rumors that are circulating here. The optimists assert that it is incredible that Messrs. Millar and Llewelyn and their clients should have desired to capture the control of the company if the future of the mine was unpromising, while the pessimists allege that Mr. Whitaker Wright was quite equal to earning dividends if there were dividends to be earned. As there is no way of deciding betwen these differences of opinion except by examining the mine itself, the wisest course for shareholders is to wait for Mr. Frecheville's report.

Circulars are being sent round to shareholders in Mr. Whitaker Wright's other British Columbia companies—Rossland Great Western and Kootenay Mining—inviting them to join in an agitation for the setting aside of the contract selling the properties to the companies and for making the vendors and promoters refund the moneys paid to them. The importance of this agitation may possibly be magnified when the news is circulated in British Columbia, so it is just as well for me to mention that the agitation is of no importance, as it is not organized in the interest of shareholders, but it is got up by people who make a specialty of investigating and agitating, and make a living thereby. The movement may therefore be dismissed as being of no importance.

The prospectus of a company called South Fingall, Limited, has been advertised this week. The company has been formed to acquire a property of that name in Murchison District, West Australia, and its flotation is superintended by Mr. Lewis Aarons, who was mainly instrumental in getting Mr. Whitaker Wright off the board of Le Roi. The property adjoins Great Fingall Consolidated, one of the Bewick-Moreing mines, which has shown excellent results, and it is chiefly on the reputation of its neighbor that South Fingall is floated. Prospecting has, however, proved that there are solid reasons for believing South Fingall to have a promising future.

In absence of any other speculative center, West Africa continues to engage the attention of the promoters. Several reports have recently been issued by companies formed over a year ago, and some of them show a paper profit due to the flotation of subsidiary companies, while others report that exploratory work and development are going on. Some announce that the properties originally acquired have already been abandoned and new options taken up. Altogether there are so far very few that are doing more than prospecting work. Another new company, called the Assin & Ashanti Syndicate, Limited, has been formed, to acquire a number of options in various parts of the gold coast, but no details are given, though the public are invited to inquire for shares. It is noteworthy that quite a number of French people are taking an interest in West Africa and many engineers are prospecting the French territory there. So far we have received no detailed reports from the French companies.

ANNUAL MEETINGS.

Name of Co.	L'cation.	Date.	Place of Meeting.
*Am. Alkali	Mich....	Oct. 30	Philadelphia.
Breece	Colo.....	Oct. 16	24 Broad St., N. Y.
Central Eureka..	Cal	Oct. 24	San Francisco, Cal.
Comstock Tunnel	Nev	Oct. 14	25 Broad St., N. Y.
Con., Cal. & Va.	Nev	Oct. 21	San Francisco, Cal.
Fanny Rawlings.	Colo	Nov. 4	Colorado Sp'gs, Colo.
Great Western, q	Cal	Nov. 6	San Francisco, Cal.
*Magnolia. ...	Utah....	Oct 22	Salt Lake City, Utah.
*National Salt....	U. S	Oct. 16	26 Broadway, N. Y.
Siskiyon Con.	Cal	Nov. 4	San Francisco, Cal.

*Special.

DIVIDENDS.

Name of Company.	Latest Dividend. Date.	Per share.	Total.	Total to date.
†Amalgamated Cop.	Oct. 28	$1.50	$2,308,319	$15,809,491
§Anaconda Copper..	Oct. 25	1.25	1,500,000	20,850,000
†Boston Little Circ. Z.	Oct. 15	.25	25,000	112,500
*Bunker Hill & Sull.	Oct. 4	07	21,000	1,263,000
†Calumet&Hec.,Mich.	Oct. 31	15.00	1,500,000	77,350,000
†Central Eureka, Utah	Oct. 8	.50	50,000	2,617,700
*Central Lead. Mo ..	Oct. 15	.50	5,000	257,000
†Colo. Fuel & Ir. com.	Oct. 15	1.75	297,500	732,500
*Daly-West, Utah	Oct. 15	.40	60,000	1,087,500
†Doe Run Lead. Mo.	Oct. 15	1.50	18,600	477,072
*Empire State, Ida....	Oct. 15	.10	50,554	1,157,230
Free Coinage, Cal.....	Oct. 10	.12	120,000	120,000
†Iowa, Colo	Oct. 15	.01	16,667	203,501
†Mary McKinney.....	Oct. 10	.03	30,000	330,000
Modoc, Colo	Oct. 15	.03	15.000	255,000
*N.Y & Hond.Rosario	Oct. 19	.10	15,000	1,625,000
N.Y. & Hond. Ros., ex.	Oct. 19	.10	15,000	.....
†Parrot Copper	Oct. 28	1.00	229,850	5,658,000
†Pittsburg Coal, pf	Oct. 25	1.75	560,000	4,480,000
†Portland, Colo.....	Oct. 15	.06	180,900	4,027,080
Rambler-Cariboo,B.C.	Oct. 30	.01	12.500	130.000
*Smuggler, Colo.....	Oct. 15	.03	30,000	2,095,000
*Standard, Ida	Sept.23	.05	25.000	2,390,000
Town Topics, Colo....	Nov. 1	.00½	5,000	15,000
Uncle Sam, Utah.....	Oct. 15	.03	15,000	30.000
*U. S. Marble,Wash..	Oct. 15	.00¾	15.000	43,750
†U. S. Steel, com	Dec. 20	1.00	5,082,347	10.143,462
†U. S. Steel, prefered.	Nov. 6	1.75	8,929,049	17,824.962
†United Zinc, pref....	Oct. 15	.50	7.499	60,259
*Utah, Utah	Sept.30	.02	2.000	195,000
†Va.-Car. Chem.. pf..	Oct. 15	2.00	240,000	5,100,000
West Shore Oil, Cal...	Oct. 31	.05	5,000	10,000

*Monthly. †Quarterly. §Semi-Annual.

ASSESSMENTS.

Name of Company.	Location.	No	Delinq.	Sale.	Amt.
					$
Aetna Petroleum.....	Cal	...	Sept.24	Oct. 14	10.00
Albion	Utah	2	Oct. 11	Oct. 29	.05
Andes.....	Nev.	54	Sept.30	Oct. 21	.05
Badger.....	Ore..	4	Nov. 6	Nov. 30	.05
Bullion.....	Nev..	59	Oct. 24	Nov. 14	.03
California Dredging..	Cal..	...	Oct. 21	.....	10.00
Challenge Con	Nev.	32	Oct. 21	Nov. 12	.05
Chollar	Nev..	56	Sept.23	Oct. 14	.05
Confidence	Nev.	37	Oct. 2	Oct. 23	.10
Crown Point..... ...	Nev.	83	Oct. 9	Oct. 30	.05
Gibraltar Con	Cal..	...	Oct. 14	.... ..	.002
Gold Hill	Cal..	...	Oct. 25	.....	.25
Goleta Con	Cal	3	Oct. 30	Nov. 28	.10
Gonyon..... ...	Utah	...	Nov. 1	Nov. 22	.00¼
Gould & Curry.....	Nev..	96	Oct. 22	Nov. 11	.10
Grand Prize Oil. ...	Cal..	4	Oct. 5	.....	.00½
Little Chief.....	Utah	9	Oct 5	Oct. 23	.01
Marina Marsicano ...	Cal..	25	Oct. 14	Nov. 4	.01
Mariposa Com'l & Mg	Cal.	24	Oct. 21	Nov. 11	10.00
Nugget Placer	Cal	1	Oct. 14	Nov. 7	.10
Osceola Con....	Cal..	12	Oct. 5	Oct. 28	.01
Potosi.....	Nev.	60	Oct. 1	Oct. 22	.05
Savage.....	Nev.	104	Oct. 8	Oct. 29	.10
Ukiah Oil.....	Cal..	1	Oct. 11	Oct. 29	.02
Union Con	Nev.	62	Oct. 10	Oct. 29	.10
Wasatch	Utah	...	Sept. 28	Oct. 16	.00½
West Lake Oil.....	Cal	1	Oct. 15	.....	.02
Willietta.....	Cal..	2	Sept.30	Oct. 21	.01
Yuba Con	Cal..	3	Sept.24	Oct. 24	.03
Yellow Jacket.....	Nev..	9	Oct. 22	Nov. 27	.10
Zaca Lake Oil.....	Cal..	1	Oct. 12	....	.00¼

COAL TRADE REVIEW.

Anthracite.

New York. Oct. 11.

The anthracite trade shows no signs of lessening prosperity. Demand is good enough to keep most of the collieries running close to full capacity, while prices are as firm as a rock. The outlook for the winter remains excellent.

Consumers at western points may realize that they are likely to find local supplies as short this winter as last, but the movement of coal up the lakes, though better than it has been, is hardly as yet what it should be. Retail demand in the Northwest is fair, consumers buy only as they need coal, and retailers are declining to contract for deliveries covering all winter. At Lake Superior ports the movement to inland points is more active, but is retarded by a short supply of cars. In Chicago territory receipts of lake coal have increased, and as soon as vessel owners and shippers agree on rates the movement will be heavier. The outlook for an adequate supply on the docks by the close of navigation has much improved. The movement of coal by rail is greatly hindered by the car shortage. Along the lower lakes and in Canadian territory business is good.

Along the Atlantic seaboard trade has shown a slight improvement with slightly cooler weather. Dealers at the shoal water points are pretty well supplied now. There is still a fairly liberal movement to Boston. Retal buying at New York, Philadelphia and Boston is as good as can be expected under prevailing conditions of prices and weather. The October prices for free-burning white ash coal f. o. b. New York Harbor ports are: Broken, $4; egg, $4.25; stove and nut, $4.50.

Bituminous.

The Atlantic seaboard soft coal trade from the producers' standpoint is now in excellent shape. Demand is heavy, while supply is shorter than it should be, owing to the lack of cars at the mines. All consumers are seeking to put their orders for shipment on the market at once, and, as usual when demand is great, rail transportation has given way. The car supply at the collieries is only about 50% of what it should be. Shippers are unable to set definite dates for disposing of orders, and are taking orders on the understanding that they will ship as soon as they can depend on an adequate supply of cars.

The far East is calling for considerable coal and is receiving a very fair tonnage, though the demand is greater than the amounts going forward will satisfy. Some receiving ports are still congested and unable to take care of the coal as it arrives. Consumers along Long Island Sound are calling for heavy shipments, but are receiving only a small proportion of the total wanted. As consumers in this territory, when the situation was much easier early in the summer, said they would put in coal as they wanted it, they are now receiving rather cold sympathy from producers. New York Harbor trade shows increasing demand, though this is not proportional to the increase in other territories. The all-rail trade is taking considerable coal and producers are watching keenly to see if agents are putting in orders for new business.

Transportation from the mines to tidewater is slow. Car supply at the mines is but half of what shippers want. In the coastwise vessel market vessels are in fair supply and rates are steady. We quote current rates from Philadelphia as follows: Providence, New Bedford and the Sound, 60c.; Boston, Salem, Portland and Portsmouth, 70c.; Bath, 70c.; Bangor, 90c.; Lynn, 80c.; Wareham and Newburyport, 85c.; Gardiner, 80c. and towages; Saco, $1 and towages; Dover, $1.15 and towages.

Birmingham. Oct. 7.

(From Our Special Correspondent.)

The steam coal trade is not yet as active as it might be, but there is plenty of work at the coal mines and the miners are doing well. J. de B. Hopper, State mine inspector, does not believe that the production this year will go over 8,500,000 tons. This is 250.000 tons greater than last year. The sale of several thousand acres of land in Bibb County to Dr. G. B. Crowe and associates is announced. They intend to open mines on an extensive scale.

Cleveland. Oct . 9.

(From Our Special Correspondent.)

Coal shipping on the chain of lakes received a serious setback during the week by a shortage of cars for the transportation of the material from the mines to the lake docks. The car shortage has been so serious that even the larger lines have to confess their inability to meet more than 50% of the demand for equipment. This has given quite a serious turn to coal shipments on the lake routes. Many of the shippers have entered into large contracts for the delivery of coal to the upper lake docks before the season of navigation ends. A few of them report that they have up the lakes now as much coal as they shipped last year, but say they are still far short of their contracts. The other shippers make no pretentions to being up with last year's movement or with their contracts, and announce that unless a decided change is seen in affairs before long they will not be able to meet their obligations. The car shortage is having a twofold effect upon the lake movement. By depriving the ore shippers of the medium of transporting their ore to the furnace docks it is detaining boats under the ore legs longer than ordinary and hence is keeping them out of the coal trade. The shippers therefore are short of both coal and boats for the movement up the lakes. The peculiar situation is holding the rates firm at the figures quoted last week of 60c. to Milwaukee and Lake Michigan points and 35c. to the head of the lakes. It is hardly expected that any change in the rates will be seen for the next 10 days or until the conidtions change. The Ohio coal producers announced an advance of 25c. a ton on fuel coal during the week. The domestic movement has started and is quite heavy.

Pittsburg. Oct. 9.

(From Our Special Correspondent.)

Coal.—With the exception of a few mines on the Monongahela River the mines in the Pittsburg District are being operated to their fullest capacity. The Pittsburg Coal Company, the railroad coal combination, according to one of its officials, has not met the cut in prices made a few weeks ago and is still quoting last year's prices for lump coal for delivery during the winter. These prices are: Inch-and-a-quarter, $1.45; three-quarters, $1.35, and run-of-mine,

$1.25. This company is behind in its deliveries and has orders for several months ahead. Despite the strict maintenance of prices by the combination independent producers are taking new business at 20c. a ton under the combine rates.

Connellsville Coke.—The coke trade continues to improve and prices are firm at $2 for furnace and $2.50@$2.75 for foundry. Outside coke is quoted at $1.50@$1.60 for furnace and $1.75@$2 for foundry. The production of Connellsville coke last week was 223,385 tons, a gain over the previous week of 3,000 tons. Of the 21,733 ovens in the region 19,473 were active and 2,260 were idle. The shipment for the week aggregated 10,449 cars, distributed as follows: To Pittsburg and river tipples, 3,755 cars; to points west of Pittsburg, 4,843 cars; to points east of Connellsville, 1,851 cars. This was an increase of 231 cars.

San Francisco. Oct. 5.

(From Our Special Correspondent.)

Coal receipts by water at San Francisco in September were 106,960 tons, being 29,104 tons less than in September, 1900. These figures include only the receipts by shipment, not those from California mines or from Utah and Wyoming mines by rail. For the nine months ending September 30th the total arrivals were, in short tons:

	1900.	1901.	Changes.
Eastern U. S.	14,022	23,213	I. 9,091
Oregon	28,315	27,020	D. 1,295
Washington	491,077	489,807	D. 1,270
Total domestic	533,414	540,040	I. 6,626
British Columbia	447,041	375,283	D. 71,758
Australia	113,175	105,860	D. 7,315
Japan	6,100	.....	D. 6,100
Great Britain	55,987	30,656	D. 25,331
Total foreign	622,303	511,799	D. 110,504
Totals	1,155,717	1,051,839	D. 103,878

The falling off was chiefly in British Columbia coal. The total decrease this year was 103,878 tons, or 9%. The increased consumption of fuel oil is beginning to show in the coal trade.

Foreign Coal Trade. Oct. 11.

Export business is quiet, with few new contracts noted. The combination to secure trade in France is still discussed, but there is no definite news in relation to it.

Ocean freight rates from the United States continue easy. We note charters have been booked from Norfolk to Barcelona, Spain, at 10s. ($2.40), and from Newport News to Marseilles, France, at 9s. 6d. ($2.28); both sailing this month. The rate from Norfolk to Manila, P. I., has dropped to $5.75, or 25c. less than was recently made.

Messrs. Hull, Blyth & Company, of London and Cardiff, report, under date of September 21st, that at Cardiff there is not much activity in the market, but prices are firm at round last week's figures. The quotations are: Best Welsh steam coal, $4.56@$4.80; seconds, $4.32; thirds, $3.96; dry coals, $3.72; best Monmouthshire, $3.84@$3.96; seconds, $3.48@$3.60; best small steam coal, $2.40; seconds, $2.04; other sorts, $1.68.

The above prices for Cardiff coals are all f. o. b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f. o. b. Newport, exclusive of wharfage, but inclusive of export duty, and are for cash in 30 days, less 2½% discount.

The freight market continues in a depressed condition, especially toward the Mediterranean. Some rates noted are from Cardiff: Marseilles, $1.25; Genoa, $1.32; Naples, $1.32; Port Said, $1.32; Singapore, $3.78; Las Palmas, $1.44; St. Vincent, $1.62; Rio Janeiro, $3.36; Santos, $3.60; Buenos Aires, $3.48.

Shanghai, China. Sept. 4.

(Special Report of Wheelock & Co.)

Coal.—A good many cargoes of Japan coal have arrived during the past fortnight, but very few sales have been reported. Cardiff coal is moving in small quantities at slightly reduced prices. The usual retail business is doing in Sydney Wollongong. Arrivals of all kinds of coal during the fortnight ended September 4th were 19,775 tons. We quote, per ton: Welsh-Cardiff, 19 taels ($12.73); Australian Wollongong, 12.50 taels ($8.38); Japan, Takasima, Namazuta, and Miike all contracted for; but other sorts, 6@7 taels ($4.02@$4.69); Chinese, Navy, $16; locomotive, $13; household, $12; No. 1, slack, $10; No. 2, slack, $7.75, and No. 3, slack, $7.

Kerosene Oil.—Natives' stocks are still very large. Including arrivals during the week, stocks are estimated at 442,500 cases American, 110,250 cases Russian, and 235,700 cases Dutch; total, 788,450 cases. We quote, per case, as follows: American Devoes, 1.71½ taels ($1.15); Russian Batum, Anchor chop, 1.56 taels ($1.04); Star & Crescent and Horse Chop, 1.53 taels ($1.02); and bulk oil, in 2 tins, 1.48 taels (99c.), or loose, 1.10 taels (74c.); Sumatra Langkat, in 2 tins, 1.48 taels; loose, 1.10 taels, and Dragon Chop, 1.42½ taels (95c.).

SLATE TRADE REVIEW.

New York. Oct. 11.

The list of prices per square of No. 1 slate, standard brand, f. o. b. at quarries in car-load lots, is given below:

Size, Inches	Monson or Br'nville.	Bangor.	Bangor Ribbon.	Alb'n or Jackson Bangor.	Chap'n Key's'ne	Peach Bottom.	Sea Gr'n	Unfad'g Green.	Red.
	$	$	$	$	$	$	$	$	$
44 x 14	6.50	3.50	3.00	3.00	....	5.10	3.00	....	....
24 x 12	6.60	3.50	3.00	3.00	3.80	5.25	3.00	3.75	.....
22 x 12	6.60	3.50	3.25	3.00	....	5.25	3.00	3.75	.....
22 x 11	6.50	3.75	3.25	3.00	4.00	5.25	3.00	4.00	.....
20 x 12	6.80	3.75	.....	3.00	.....	5.25	3.00	3.75	.....
20 x 11	6.80	.....	.....	3.25	....	5.25	3.00	.....	.....
20 x 10	6.80	4.25	3.50	3.25	4.00	5.35	3.00	4.25	10.50
18 x 12	6.80	3.75	.....	3.00	.....	5.25	3.00	3.50	.....
18 x 11	7.00	.....	.....	.....	.....	....	3.00	3.75	.....
18 x 10	7.00	4.25	3.50	3.25	4.00	5.35	3.00	4.00	10.50
18 x 9	7.00	4.50	3.50	3.25	4.00	5.35	3.00	4.25	10.50
16 x 12	6.80	3.75	.....	3.00	.....	.....	2.90	3.50	....
16 x 10	7.00	4.00	3.50	3.25	4.00	5 25	2.90	4.00	10.50
16 x 9	7.00	4.25	.....	3.25	4 00	5.35	2.90	4.25	10.50
16 x 8	7.00	4.50	3.50	3.25	4.25	5.35	2.90	4.25	10.50
14 x 10	6 60	3.75	3.25	3.00	.....	5 25	2.70	3.75	10.50
14 x 9	6.50	.....	.....	.....	.....	....	2.70	3.75	10.50
14 x 8	6 60	3.75	3.25	3.00	4.00	5.10	2.70	4.25	10.50
14 x 7	6.40	3.75	3.25	3.00	3.75	5.10	2.50	4.25	10.50
12 x 10	5.75	....	...	....	...	...	2.50	3.25	....
12 x 9	5.60	.....	.....	.....	...	....	2.50	3.25	.....
12 x 8	5.50	3.50	.....	2.85	.....	4.85	2.50	3.50	9.00
12 x 7	5.00	3.25	.....	2.85	3 25	4.85	2.00	3.50	9.00
12 x 6	4.80	3.25	.....	2.85	3.25	4.75	2.00	3.50	8.50

A square of slate is 100 sq. ft. as laid on the roof.

Quarrying is active, as prices are better, especially for roofing slate. In September the movement of roofing slate from Pennsylvania regions were the largest this year, particularly to the home trade, though some good-sized export orders were filled for the British and Danish markets. School slates and blackboards were not as active as for August, when manufacturers were rushed to fill season orders.

Reports from abroad give the exports of slate from Carnarvon, Wales, in the year ending June 30th at 80,973 long tons, showing an increase of 45 tons only as compared with the previous year.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 482.)

New York. Oct. 11.

Heavy Chemicals.—Future shipments absorb attention, as prompt business is only of a retail character. Some more 1902 orders for domestic high test alkali have been booked at 77½@82½c. per 100 lbs., f. o. b. works. There has also been some trade in 1902 domestic high test caustic soda at $1.90@$1.92½ per 100 lbs. f. o. b. works. Bicarb. soda shows a better export demand, while makers compete keenly, causing weak prices. Sal soda is moderately active. Bleaching powder is in small supply on spot, as cargoes arriving are already under contract.

Prices per 100 lbs. are as below:

Articles.	Domestic. F.o.b. Works.	Domestic. In New York	Foreign. In New York.
Alkali 58%.	77½@82½	....	.....
" 48%.	82½@87½	....	.....
Caustic Soda, high test....	$1.90@$1.92½	.....	$2.25@$2.50
powd. 60%.	.....	$2.75	....
70@74%.	.....	2.85@3.00	....
98%.	....	3.25	3.75@4.00
Sal.Soda.....	.55	.65	.65@.67½
" " conc.	1.25@1.50	....	1.75
Bicarb. Soda.	.95@1.00	.....	1.37½@1.75
" " extra	3.25@3.50	.....	.....
Bleach. Pdr., Eng. prime.	.....	....	2.10@ 2.25
other br'nds	.....	....	1.90@ 2.00
Chl.Pot. cryst	....	8.25@8.37½	9.75@10.00
" powd.	....	8.37½@8.62½	10.25@10.75

Acids.—Oxalic continues weak, and 1902 orders can be booked at $5.12½@$5.25 per 100 lbs., while immediate deliveries are quoted as below. Sulphuric shows a good consumption among fertilizer makers, and estimates put the acid output above last year. Blue vitriol is firm, owing to the improved copper market. Our exports so far this year are in excess of 1900.

Quotations are per 100 lbs., as below, unless otherwise specified, for large lots in carboys or bulk (in tank cars), delivered in New York and vicinity:

Acetic	$1.80	Nitric, 42°	$4.37½
Blue Vitriol	4.50@4.75	Oxalic	5.25@5.87½
Muriatic, 18°	1.25	Sulphuric, 50° bulk, ton	12.00@14.00
Muriatic, 20°	1.37½	Sulphuric, 60°	.90
Muriatic, 22°	1.50	" bulk, ton	16.00@18.00
Nitric, 36°	3.62½	Sulphuric, 66°	1.10
Nitric, 38°	3.87½	" bulk, ton	19.00@21 00
Nitric, 40°	4.12½		

Brimstone.—The increased consumption has strengthened the market materially. Best unmixed seconds on spot to-day are the highest in months—$23.25@$23.50 per ton, while shipments are firmly held at $22.25@$22.50. Best thirds are about $3 less than seconds. Importers' prices in September average $22.40 per ton for spot best unmixed seconds, and $22.20 for shipments, while best thirds ruled $3 lower. In the 9 months ending September 30th best unmixed seconds on spot averaged $22.58, and shipments $21.66. As compared with the last year, these prices show an increase of 54c. per ton in spot and 50c. in shipments. Best thirds were quoted at $2 to $3 per ton less than seconds. Abroad the syndicate has strengthened the market.

Pyrites.—Business shows good demand and firm prices. The increased consumption by acid makers has induced importers to contract for vessel room from Spain for months ahead. At the domestic mines production is active. We quote, per ton, as follows: Mineral City, Va., lump ore, $4.90 per long ton, and fines, 10c. per unit; Charlemont, Mass., lump, $5, and fines, $4.75. Spanish pyrites, 12@14c. per unit delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46@51% of sulphur; American from 42@44%.

Sulphate of Ammonia.—Foreign gas liquor is in moderate supply here, and is held at $2.80@$2.82½. Domestic is worth $2.75 per 100 lbs., f. o. b. Boston, Mass.

Phosphates.—The customary contracting season has arrived, and already some good-sized orders have been booked. It is noticeable that the largest sellers are the least desirous to book at present low prices, as they are well informed as regards stocks in superphosphate makers' hands and expect more money in the near future. In fact, some exporters are rather bullish just now. On the other hand, foreign consumers are benefited by the prevailing low ocean freight rates, which influence c. i. f. prices to a marked degree. In September prices were almost stationary, and the average for the month differs little from August. Below we tabulate the average prices so far this year, which illustrate how well the industry is being regulated. Prices are somewhat lower than last year, owing chiefly to increased competition following a falling off in consumption in Germany.

	September. F.o.b.	September. C.i.f.	Nine mos. F.o.b.	Nine mos. C.i.f.
Florida high-grade rock..	$6.75	$11.36	$6.80	$11.58
Florida land pebble.....	3.93	8.49	3.95	8.70
Florida Peace River.....	2.63	6.30	2.63	7.33
Florida	$4.44	$8.72	$4.46	$9.20
Tenn. 78@80% (export).....	3.68	10.73	3.38	10.77
Tenn. 78% (domestic).....	3.00	.....	2.96	.....
Tenn. 75%.....	2.78	.....	2.73	.....
Tenn. 70@72%.....	2.29	.....	2.27	.....
Tennessee	$2.94	$10.73	$2.83	$10.77
South Carolina dried rock	3.50	6.30	3.58	7.12
Average, ton.....	$3.62	$8.58	$3.62	$9.03

As compared with the corresponding 9 months last year, Florida phosphates have fallen in value from 10 to 20%, and the other kinds proportionately.

Ocean freight rates from Florida and Savannah to the various consuming markets abroad were much less than last year.

African phosphates, which compete with our 58@70% material, have also suffered a decline this year. The average prices quoted c. i. f. United Kingdom and European ports in September and the 9 months this year were:

	September.	Nine months.
Algerian, 63@70%.....	$8.37	$8.80
Algerian, 58@63%.....	6.90	7.32
Tunis (Gafsa).....	6.45	7.25
Average, ton.....	$7.24	$7.79

For some time Tunis phosphates were sold on the basis of 58@63% Algerian rock, but when competition arose the leading producer of Tunis ordered a general cut in prices. These phosphates find their best market in France and England.

The exports of Florida high-grade rock from Savannah in September were the largest of any month this year, amounting to 18,483 tons. In the 9 months ending with September the total exports were 113,738 tons, showing an increase of 28,021 tons, or 24.7%, as compared with the corresponding period last year. The rock shipped this year was distributed as follows: Germany, 57,315 tons; Holland, 22,860 tons; Belgium, 13,540 tons; Italy, 8,340 tons; United Kingdom, 5,929 tons; Sweden, 3,154 tons; Denmark, 2,600 tons.

We quote prices as below:

Phosphates.	Per ton F. o. b.	C i. f. Un'd Kingdom or European Ports. Unit.	Long ton.
*Fla. hard rock (77 @ 80%)	$6.50@7 00	7 @7½d	$10.92@11.70
*Fla. land pebble (68@73%	3.55@4.00	6 @6¼d	8.40@ 8.57
*Fla. Peace River (58@63%)	2.50@2.75	5 @5½d	6.00@ 6 60
†Tenn....78@80%, export.	3.25@3.50	6¾@7d	10.53@10.92
†Tenn.....78% domestic.	3.00	.....	.....
†Tenn .. 75% "	2.75@2.85	.....	.....
†Tenn..70@72% "	2.25@2.40	.....	.....
§So Car. land rock.....	3.50	5@5¼d	6.00@6.60
§So. Car. river rock	2.75@3.25	.....	.....
Algerian, rock...(63@70%)	.....	6@6¼d	8.04@8.70
Algerian, rock...(58@63%)	... .	5¼@6d	6.60@7.20
Tunis, Gafsa.....	.....	5¼@5½d	6.30@6.60

* Fernandina, † Mt Pleasant. § On vessels Ashley River.

Freight rates from Florida ports are about as

follows: To Baltic ports, $5; Continental, $3.24@$3.60; Mediterranean, $4.20@$4.56; United Kingdom, $3.84.

From Savannah, Ga., to Continental ports, $3.18.

Nitrate of Soda.—Extremely quiet, owing to heavy shipments from the coast, and a large visible supply to January 15th next, amounting to 595,583 bags, being an increase of 142,581 bags, or 24% as compared with last year. Spot nitrate of soda is obtainable at $1.90 per 100 lbs., and futures, $1.92½@$1.95, according to position. The bark "Thetis" is at Hampton Roads with 14,700 bags unsold, and destination unknown. The steamer "Cumbal" sailed for New York with 44,400 bags on October 7th. New York prices as quoted by importers are higher this year than last, owing to the better regulation of the industry by the producers' combination. The average price per 100 lbs. for spot in September was $1.89, and for the 9 months this year, $1.85. Future shipments in the 9 months fluctuated between $1.80@$1.97½, according to position, while last year the extreme prices were $1.60@$2.10.

The industry in Chile is materially better than last year, as can be seen by the 7 months (January to July) statement below:

	1900.	1901.	Changes.
Production, qtls...	18,195,601	15,942,000	D. 2,253,601
Exports, qtls.....	13,309,000	14,076,800	I. 767,800
World's cons'p'n, qtls..	24,146,700	22,934,700	I. 1,152,000
	s. d.	s. d.	s. d.
Prices, 95 per cent. qtl..	4 9 to 5 5	5 10¼ to 6 5⅜	I. 1 1⅛ to 1 ¼
" 96 " " ..	5 1 to 5 5⅛	6 1 to 6 7	I. 1 0 to 1 1⅛
Ocean freights, ton. ...	28 9 to 38 9	21 3 to 27 6	D. 7 6 to 11 3

It is worthy of note that notwithstanding the advance in price this year, the world's consumption has increased nearly 5%. It is also of interest to state that the production this year exceeds the exports by only 1,865,200 qlts., or 11.7%, whereas in 1900 the excess was 4,886,601 qtls., or 26.8%. This shows a marked improvement in the statistical situation this year. That profits have been satisfactory this year is shown by an estimated increase of over $3,500,000 in the selling value of the nitrate exported, and by a saving of over $1,400,000 in freight charges. Of course, these figures do not represent net profits, as much money has been spent in developing and improving the properties; but the estimates show that there were some increased profits in the industry this year. Judging from contracts already taken, prices of nitrate next year will deviate little from the present, unless consumption decreases considerably.

The exports for Europe in September were 1,300,000 qtls., and for the United States, 320,000 qtls.; total, 1,620,000 qtls. Loadings on October 1st were 2,900,000 qtls. for Europe, and 130,000 qtls. for the United States; total, 3,030,000 qtls. Included in the United States loadings is the "Cumbal" cargo, as noted above.

IRON MARKET REVIEW.

New York, Oct. 11, 1901.

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending Oct. 12, 1900. F'ces.	Tons.	Oct. 11, 1901. F'ces.	Tons.	From Jan.,'00. Tons.	From Jan., '01 Tons.
An'racite & Coke.	182	215,550	221	300 675	11,008,080	11.855.114
Charcoal.	31	8.325	25	7,475	294,238	313,905
Totals..	213	233,875	246	308,150	11,302,318	12,169,019

A feature of the week has been some large buying of bessemer pig in Pittsburg by important interests. Foundry iron and forge pig have also been in good demand. There has been talk in the East of probable concessions in prices, but it seems to be founded on buyers' hopes, rather than on facts.

The furnace reports for October 1st show a slight increase in production, with a decrease in the number of active furnaces. This is due to the blowing in of several large furnaces, while some smaller stacks have gone out. The "Iron Age" report puts unsold stocks of pig on October 1st at 361,593 tons, or 18,481 tons less than on September 1st.

Business in finished material continues large, and contracts for next year's delivery are beginning to be made.

Birmingham. Oct. 7.

(From Our Special Correspondent.)

There is a strong inquiry for pig iron and some good sales are made, with demand greater than production. Stocks in the furnace yards are being reduced steadily. There is no doubts but that the 50c. advance in quotations will be maintained for the balance of the year. The market is strong and firm.

As to production, there has been no change in the past 2 weeks.

The following quotations for pig iron are given: No. 1 foundry, $11.50@$12; No. 2, $11; No. 3, $10.50; No. 4, $9.75; gray forge, $9.50@$9.75; No. 1 soft, $11.50@$12; No. 2, 11.

There is much activity in steel and finished iron. The production of steel is greater than ever. A small order of forged steel is being filled for the Government by the Tennessee Coal, Iron & Railroad Company from its Ensley plant.

The rolling mills in this district are still in full blast, with a fairly good amount of orders ahead. The rolling mills at Sheffield, Ala., which have been idle for 8 weeks and longer, have resumed operation. Machinery has been put in for the manufacture of cotton ties. The plant of the Alabama Tube and Iron Company at Helena is nearing completion. There is room for more skilled mill men in the dtstrict.

Buffalo. Oct. 9.

(Special Report of Rogers, Brown & Co.)

The pig iron market continues strong under a good volume of business and an increasing scarcity of iron for immediate shipment. The latter feature is at present the chief concern with both buyer and seller, the daily correspondence of the latter being chiefly composed of letters and telegrams making urgent demands for shipments, to which the furnaces are not able to respond to the extent desired. Under these conditions sales by local furnaces are confined to coevring wants for the future. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $15.50; No. 2, $15; Southern soft, No. 1, $15.25; No. 2, $14.75; Lake Superior charcoal, $18.25; coke malleable, $15.

Cleveland. Oct. 9.

(From Our Special Correspondent.)

Iron Ore.—Delays to boats carrying ore to Ohio ports of from 5 to 8 days are not uncommon nowadays, due to the fact that cars are scarce for a direct movement from the boats to the furnaces, and the shippers refuse to pay the extra charge for docking here. As a result there is, as far as this season is concerned, an unprecedented demand for ore-carrying tonnage. The rates are holding firm at 90c. from Duluth; 80c. from Marquette, the latter an advance of 5c., and 60c. from Escanaba. During the month of September the receipts at the lower lake docks amounted to 2,893,669 tons, as against 2,519,043 tons for the same month in 1900, an increase therefore of 374,626 tons. The total movement to October 1st, this year, was 15,157,105 tons, as against 14,885,065 tons for the same period a year ago, an increase therefore of 272,040 tons. At the beginning of September the shippers were 102,586 tons short of the movement to the same date the year before. No ore sales have been reported during the week, but the prices remain nominally at $4.25 on bessemer and $3 on non-bessemer and Mesabi.

Pig Iron.—Foundry grades are selling at advanced prices. The minimum on No. 2 is now $13.75, with some iron disposed of during the week at $14.25, Valley furnace. The trend of the market is about $14, in the Valley. The supply is very short and deliveries are not offered before January 1st. Contracts have been placed covering deliveries well on into next year. Southern No. 2 is quoted at $11.50, Birmingham. Sales of basic and bessemer have been made in lots of 3,000 to 5,000 tons during the week, but the prices have not changed. No buying has been noted now entailing deliveries after the first of the year. Bessemer is quoted $15.25, Valley furnace, and basic $14.25.

Finished Material.—Heavy sales of steel rails for delivery next year have been the principal feature of the market this week. Railroads in this section are covering for next year freely at the old prices of $28, with little prospect of a change in the quotation. Plates are strong at the former prices of 1.60c., Pittsburg, and deliveries are not promised in less than 5 or 6 weeks. Some of the mills are not taking plate orders, while none of the Pittsburg mills are able to offer deliveries much before the first of the year. Light plates are especially scarce. Billets are hard to get. Small billets are off of the market almost entirely, and the supply of the larger sizes is nothing to boast of. Quotations are $30 on small billets and $28 on larger sizes. Structural material is a leader on the market. No mills, in the larger class, are offering deliveries before the middle of December, although some of the smaller ones can take orders requiring shipment late in November. The mills are reporting that orders on bars and sheets are coming in steadily in excess of shipments and the trade is brisk. Iron bars are quoted at 1.55c., Youngstown, and steel bars at 1.60c., Pittsburg. Sheets are especially in demand, with prices holding firm.

Old Iron.—Prices on scrap were marked up this week on an average of about $1.50 a ton. The following prices prevail: Heavy steel, $17; steel rails, $17; old iron rails, $22; old car wheels, $17; steel axles, $19; stove plate, $10; cast scrap, $13; wrought turnings, $12.50; cast borings, $8; No. 1 wrought, $16.50.

Philadelphia. Oct. 11.

(From Our Special Correspondent.)

Pig Iron.—The reported transactions in pig iron throughout eastern and middle Pennsylvania, so far as the figures and prices can be gathered, show a rather quieter week, but no weakness in prices except in one or two cases of ordinary iron, where spot cash was the consideration. Brokers say the average sales are in excess of consumption, which indicates a desire to accumulate. There is quite a large amount of basic pig under contract, and work into which this product enters is very pressing. Bessemer pig is very firm and a great deal has been contracted for under the stimulus of Pittsburg dealings. All Eastern mill managers are either buying forge or are seeing to it that they will not be disappointed when the time comes to buy. Foundry irons are said to be higher in case of a few first-class and special brands, but inquiry at headquarters shows the makers have nothing to sell. Quotations are: No. 1 X foundry, $15.50@$16; No. 2 X foundry, $15.50 for best; No. 2 plain, $14.50; standard forge, $14; ordinary, $13@$13.50; basic, $14; bessemer, $14.50.

Billets.—The oversold condition of every producer east and west makes prices, especially for early delivery, rather nominal. Consumers do not believe the extreme views of makers can be sustained much longer. It is said less than $25.50 has been taken for next year's delivery, but buyers think $25 will soon be an extreme limit for late delivery.

Merchant Bars.—The pressure for merchant iron appears to be as great as ever. Reports from several interior mills certainly show buyers are not asleep. It has been said that the present inquiry will very soon slacken up, but that is a guess. There is no evidence of weakness anywhere in this territory and refined iron still commands 1.65c.

Sheets.—There are some signs that the long sustained rush for sheet iron is nearing its culmination. This market will now bear watching, but as yet there is no slacking up of orders and certainly prices are as strong as ever.

Merchant Steel.—Nothing has happened to shake confidence in the steel trade. The implement people and hardware manufacturers are large and steady buyers. Manufacturers would hardly show weakness by cutting prices on the first falling off of business. Quotations continue the same.

Skelp.—Our skelp mills are overrun with work and the problem is to keep up with demand. The feeling is expressed in some quarters that the climax will be reached soon, but those who know most about the condition of business say the skelp mills have several months' steady work assured.

Structural Material.—The information given out does not clear up the rumors that lower structural prices are probable before the close of the year. Representatives dwell on the generally healthy condition of trade and believe the mills will be taxed all through 1902.

Steel Rails.—The news is that large rail orders will soon be placed. The inference permitted to be drawn is that these orders will come from Eastern systems. There is no way to verify the rumor. It is the talk in the trade here that a good deal of business will be done somewhat sooner than last year, but everything said is too hazy and indirect to be of value.

Old Rails.—Old iron rails have sold at $20 and $19 is offered for some more. Old steel rails are quoted nominally at $12, but no sales can be referred to.

Pittsburg. Oct. 9.

(From Our Special Correspondent.)

The iron and steel trade is stronger this week and prices in some lines are higher. An increasing demand is stimulating prices, but it is impossible to care for all the business that is offered. The outlook for the last quarter of the year is unusually encouraging. Manufacturers are endeavoring to maintain a steady market and prevent abnormal prices which might terminate in a disastrous decline. This was illustrated at the meeting of the steel plate pool held in New York last week, when conditions were reviewed and present prices were reaffirmed. It was generaly admitted that the trade could stand an advance on account of the temporary strong demand, but a permanent market at existing rates seems more desirable. Bessemer and open-hearth billets are growing scarcer and there are no immediate signs of improvement. The United States Steel Corporation is using all that can be produced by its steel mills and while $26 is quoted for bessemer and $28 for open-hearth billets it is conceded that at least $2 more could be obtained. An Eastern consumer was in the Pittsburg market this week for 1,000 tons of bessemer billets and offered $28, but without success. The iron and steel mills and blast furnaces are all running full and there is enough business in sight to insure steady operation during the balance of the year. The National Tube Company's plants in this district began this week to operate on Sunday's for the first time in a number of years. The trouble in some of the tin-plate plants that were put on the non-union list by the disastrous strike of the Amalgamated Association is practically ended and these works are being operated as successfully as before the strike. At the Demmler works arrangements are being made to in-

crease the capacity from 11 to 24 mills. The proposed dismantling of 6 of the 14 mills of the Monongahela plant has been abandoned. The Monessen system of operation has been adopted at this plant and also at the Star works. At the other tin-plate plants which are now non-union, the objectionable features of the Amalgamated scale have been eliminated and the production is greatly increased thereby.

It is asserted on good authority that one lot of 10,000 tons bessemer pig was sold at $15, Valley. Other grades of pig iron are stronger this week. No sales of basic iron are recorded, although there were a number of inquiries. Some new business was taken in steel bars and plates, but deliveries this year seem to be out of the question.

Pig Iron.—The sales of bessemer iron amounted to 20,000 tons at $15@$15.25, Valley furnaces. About 8,000 tons of foundry No. 2 were sold, the minimum price being $14.50, Pittsburg. Gray forge is quoted at $13.85@$14, Pittsburg, and 9,000 tons were sold.

Steel.—The steel mills have all the business they can handle. Bessemer and open-hearth billets are quoted at $26 and $28, but it is impossible to buy at those prices. A premium of $2 has been offered for bessemer billets. Steel bars and plates continue in good demand, but prices are unchanged. Bars are quoted at 1.50c. and tank plate at 1.60c.

Sheets.—There is but little improvement in the conditions of the sheet market. While inquiries continue to come in daily no new business is being accepted for delivery within 3 months. The American Sheet Steel Company continues to quote No. 28 gauge at 3.10c. and the independent producers are not accepting any new orders at less than 3.35c. Galvanized sheets are still quoted at 70 and 5% off.

Ferro-manganese.—There has been no sales of domestic 80% and all sales of the foreign product were at $53.50@$55.

New York. Oct. 11.

Pig Iron.—The local market is strong and firm, and sales are being made for delivery into next year. We quote for tidewater delivery: No. 1 X foundry, $15.15@$15.65; No. 2 X, $14.65@$15.15; No. 2 plain, $14.15@$14.65; gray forge, $14@$14.50. For Southern iron on dock, New York, No. 1 foundry, $15.50@$15.75; No. 2, $14.75@$15; No. 3, $14.25@$14.50; No. 4, $13.75@$14; No. 1 soft, $15.50@$15.75; No. 2, $14.50@$14.75.

Bar Iron and Steel.—Demand is very heavy. We quote 1.53c. for common bars in large lots on dock: refined bars, 1.63c.; soft steel bars, 1.65c.

Plates.—Demand continues good. We quote for tidewater delivery in car-loads: Tank, ¼-in. and heavier, 1.78c.; flange, 1.88c.; marine, 1.98c.; universals, 1.78c.

Steel Rails and Rail Fastenings.—No heavy sales are noted in the local market. Standard sections are quoted at $28 at Eastern mills; light rails at $28@$30, according to weight. Spikes are 1.80c.; splice bars, 1.55c.; bolts, 2.60@2.70c.

Structural Material.—The market continues active, with small buyers sometimes forced to pay premiums for immediate delivery. We quite for large lots at tidewater as follows: Beams, 1.75c.; channels, 1.75c.; tees, 1.80c.; angles, 1.75c.

METAL MARKET.

Gold and Silver Exports and Imports, New York.

For the week ending Oct 10th, 1901, and for years from January 1st, 1901, 1900, 1899 and 1898

Period.	Gold. Exports.	Gold. Imports.	Silver. Exports	Silver. Imports	Total Excess, Exp. or Imp.
We k	$	$563,300	$495,089	$63,811	I. $132,022
1901..	25,808,029	3,967,385	24,559,810	2,926,777	E. 43,423,687
1900 .	36,472,923	1,873,714	30,852,197	3,865,362	E. 61,586,044
1899 .	11,558,715	12,067,159	22,335,257	2,921,276	E. 18,905,537
1898 .	6,973,605	90,726,672	26,893,634	2,419,864	I. 59,279,597

There were no exports of gold during the week; imports were from various sources. Exports of silver were chiefly to London; imports came from Mexico and the West Indies.

The United States Assay Office in New York reports the total receipts of silver at 69,000 oz., against 20,000 oz. last week.

Prices of Foreign Coins.

	Bid.	Asked.
Mexican dollars	$.45¾	$.48
Peruvian soles and Chilean pesos	.42	.45
Victoria sovereigns	4.85	4.88
Twenty francs	3.84	3.88
Twenty marks	4.73	4.85
Spanish 25 pesetas	4.78	4.82

Financial Notes of the Week.

Business continues quiet generally, while the speculative markets are still depressed under the general weakness of industrial stocks. The probability of gold imports is still discussed, but the situation remains practically unchanged.

Silver continues to rule at a steady figure. Fluctuations are between extremely narrow limits. Demand is satisfied with the daily offerings, and apparently there is no disposition to push the figure up.

The statement of the United States Treasury on Wednesday, October 9th, shows balances in excess of outstanding certificates as below, compared with the corresponding day last week:

	Oct. 2.	Oct. 9.	Changes.
Gold	$101,810,790	$101,188,360	D. $622,430
Silver	20,536,349	19,004,543	D. 1,531,806
Legal tenders	8,603,084	8,640,623	I. 37,539
Treas. notes, etc...	50,793	62,387	I. 11,594
Totals	$131,001,016	$128,895,913	D.$2,105,103

Treasury deposits with national banks amounted to $115,362,479, showing an increase of $4,672,194 over last week.

The statement of the New York banks, including the 63 banks represented in the Clearing House—for the week ending October 5th—gives the following totals, comparison being made with the corresponding week in 1900 and 1901:

	1899.	1900.	1901.
Loans and discounts.	$710,582,500	$816,810,700	$873,558,200
Deposits	781,158,800	877,210,800	943,553,100
Circulation	15,534,700	30,110,800	30,618,100
Specie	147,252,400	163,404,100	180,354,600
Legal tenders	48,680,500	62,140,500	71,093,700
Total reserve	$195,932,900	$225,544,600	$251,448,300
Legal requirements...	195,289,700	219,302,700	235,888,275
Balance, surplus....	$643,200	$6,241,900	$15,560,025

Changes for the week, this year, were increases of $5,948,500 in loans and discounts, $7,100,800 in deposits, and $1,418,200 in specie; decreases of $54,400 in circulation, $376,000 in legal tenders, and $733,000 in surplus reserve.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars and comparison is made with the holdings at the corresponding date last year:

	1900.		1901.	
Banks:	Gold.	Silver.	Gold.	Silver.
N. Y. Ass'd	$163,404,100	.....	$180,354,600	.....
England...	174,856,510	.....	190,788,120	.....
France....	458,384,265	$224,954,660	473,616,335	$222,452,665
Germany..	118,430,000	61,010,000	137,020,000	70,585,000
Aus.-Hun.	188,865,000	49,575,000	222,945,000	54,280,000
Spain.....	68,445,000	81,765,000	70,025,000	85,680,000
Neth'l'ds..	24,350,000	28,065,000	29,727,000	28,587,500
Belgium...	13,570,000	6,785,000	15,113,500	7,556,500
Italy.....	77,165,000	8,350,000	79,340,000	9,852,000
Russia.....	374,520,000	33,790,000	337,645,000	31,795,000

The returns of the Associated Banks of New York are of date of October 5th, and the others October 3d, as reported by the "Commercial and Financial Chronicle" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold. The Bank of England reports gold only.

The Treasury Department's estimate of the money in the United States on October 1st is as follows

	Total stock.	In Treasury.	In circulation.
Gold coin (inc. bullion in Treas.)	$1,160,353,790	$251,635,354	$631,201,267
Gold certificates	.....	.....	277,517,169
Silver dollars	526,544,894	19,905,817	71,201,115
Silver certificates	.....	.....	435,437,962
Subsid. silver	90,613,512	9,075,395	81,538,117
Treas. notes of 1890.	43,026,000	81,219	42,944.781
U. S. notes	346,681,016	8,651,150	338,029,866
Curr'ncy certific'tes	.....	.....	.....
Nat. bank notes....	358,830,548	9,512,334	349,318,214
Totals	$2,526,049,760	$298,861,269	$2,227,188,491

Population of the United States October 1st, 1901, estimated at 78,098,000; circulation per capita, $28.52. For redemption of outstanding certificates an exact equivalent in amount of the appropriate kinds of money is held in the Treasury, and is not included in the account of money held as assets of the Government. This statement of money held in the Treasury as assets of the Government does not include deposits of public money in national bank depositaries to the credit of the Treasurer of the United States, and amounting to $102,306,575. The amount in circulation October 1st shows an increase of $29,398,667, as compared with September 1st, and an increase of $113,893,508 over October 1st, 1900.

Shipments of silver from London to the East for the year up to September 26th, 1901, are reported by Messrs. Pixley & Abell's circular as follows:

	1900.	1901.	Changes.
India	£4,341,372	£5,867,910	I. £1,526,538
China	815,256	590,212	D. 225,044
The Straits	468,444	168,126	D. 300,318
Totals	£5,625,072	£6,626,248	I. £1,001,176

Arrivals for the week, this year, were £146,300 in bar silver from New York and £29,000 from the West Indies; total, £175,300; also £50,000 in Mexican dollars from New York. Shipments were £162,500 in bar silver to India, £45,000 in Mexican dollars to Hong Kong and £22,400 to the Straits; total, £229,900.

Indian exchange continues strong and the Council bills offered in London were taken at an average of 15.97d. per rupee. The demand for bills is so good that an advance to 16d. is expected. Under present conditions it is not unlikely that gold may go from Australia to India, though no shipments are reported as yet.

Average Prices of Silver per oz. Troy.

Month.	1901. Lond'n Pence.	1901. N. Y. Cents.	1900. Lond'n Pence.	1900. N. Y. Cents.	1899. Lond'n Pence.	1899. N. Y. Cents.
January...	28.97	62.82	27.30	59.30	27.42	59.36
February..	28.13	61.06	27.49	59 76	27.44	59.42
March.....	27.94	60.63	27.59	59.81	27.48	59.64
April.....	27.30	59 29	27.41	59.59	27.65	60.10
May.....	27.43	59.61	27.56	59.96	28.15	61.23
June	27.42	59.57	27.81	60.42	27.77	60.43
July.....	26.96	58.46	28.23	61.25	27.71	60.26
August....	26.94	58.37	28.13	61.14	27.62	60.00
September	26.95	58 26	28.85	62.63	27.15	58.89
October ..	.....	... .	29.58	63.83	26.70	57.98
November	.....	.....	29.66	64.04	27 02	58.67
December.	.....	.....	29.68	64.14	27.21	58-99
Year....	.....	.....	28.27	61.33	27.44	59.58

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

Average Prices of Metals per lb., New York.

Month.	Copper. 1901.	Copper. 1900.	Tin. 1901.	Tin. 1900.	Lead. 1901.	Lead. 1900.	Spelter. 1901	Spelter. 1900.
Jan.....	16.25	15.58	26.51	27.07	4.35	4.68	4.13	4.65
Feb.....	16.38	15.78	26.68	30.58	4.35	4.675	4.01	4.64
March...	16.42	16.29	26.03	32.90	4.35	4.675	3.92	4.60
April....	16.43	16.76	25.93	30.90	4.35	4.675	3.98	4.71
May.....	16.41	16.34	27.12	29.37	4.35	4.181	4.04	4.53
June.....	16.38	15.75	28.60	30.50	4.35	3.901	3.99	4.29
July.....	16.31	15.97	27.85	33.10	4.35	4.030	3.95	4.28
August..	16.25	16.35	26.78	31.28	4.35	4.250	3.99	4.17
Sept.....	16.25	16.44	25.31	29.42	4.35	4.350	4.08	4.11
October..	.....	16.37	... ..	28.54	.....	4.350	.....	4.15
Nov.....	.....	16.40	....	28.25	.....	4.350	.....	4.29
Dec	.....	16.31	.....	28.94	.....	4.350	.....	4.25
Year. ..	.....	16.19	.....	29.90	.....	4.37	.....	4.39

The prices given in the table for copper are the averages for electrolytic copper. The average price for Lake copper for the year 1900 was 16.52c.; for the month of January, 1901, it was 16.77c.; for February, 16 90c; for March, 16.94c; for April, 16.94c; for May, 16.94c.; for June, 16.90c; for July, 16.61c; for August 16.50c.; for September, 16.54c.

UNITED STATES.

Articles. Long tons.	August. Imports.	August. Exports.	Eight months. Imports.	Eight months. Exports. Foreign.	Eight months. Exports. Domestic.
Ores & Metals.					
Antimony	192	.....	1,174	.....	.....
" ore	13	.....	714	22	.....
§Copper	4,266	6,111	21,681	4,321	59,896
" ore, matte	12,065	2,042	57,008	6,693	9,793
Iron and Steel:					
Bars, rods .. .	4,149	3,006	24,078	39	39,269
Billets, blooms.	745	275	5,234	2	27,053
Hoops, bands...	348	16	805	.....	1,009
Pig iron	4,301	2,235	28,281	126	46,795
Nails & spikes.	.....	2,177	.....	.....	22,187
Rails	18	18,473	871	.....	249,877
Scrap.	4,363	2,344	12,920	3,331	9,519
Sheets, plates..	794	1,560	2,988	81	26,258
Wire.....	160	5,573	2,261	27	53,695
Miscellaneous..	39	1	281	13	16
Iron Ore ...	122,837	13,605	609,065	.....	37,966
Lead	8	35	119	22	2,108
" ore, bullion .	8,172	6,041	71,718	62,357	.....
Manganese ore, oxide.....	11,186	2	100,371	102	.....
Nickel ore, matte	4,662	199	27,951	.....	1,721
Quicksilver	.....	19	.....	.....	230
Tin ..	2,888	22	22,709	778	.....
Tin & black plates	8,448	3	42,128	107	407
Zinc.....	64	170	329	.....	2,248
" ore	.....	3,783	.....	.....	27,098
Minerals.					
Asphalt.....	13,953	48	97,587	105	.....
Brimstone	17,978	... .	109,161	151	.....
Cement	10,233	7,780	88,112	4,460	50,041
Coal, anthracite .	.....	213,801	.....	7	1454,223
" bituminous.	141,862	543.429	1304,025	2,083	3689,273
Coke	.....	20,136	.....	.....	263 051
Copper sulphate.	....	111	.....	.....	20,881
Graphite	1	.....	5	3	.....
Nitrate of soda. .	18,869	184	139,426	1,656	.....
Phosphate rock..	24.643	108,365	96,157	30	507.613
Pyrites	31,797	.....	259.512	.....	.....
Salt	24,181	352	120,510	876	6,582

§ The figures for copper are those given by the Treasury Department. The statement made by Mr. John Stanton for the Associated Copper Companies will be found monthly in our metal market. These figures give the exports for August as 6,840 tons; eight months, 61,691 tons.

Import Duties.

Metals.—The duties on metals under the present tariff law are as fo lows: Antimony, metal or regulus, ¾c. a lb. Lead, 1½c. a lb. on lead in ores; 2½c. a lb. on pigs, bars, etc.; 2½c. on sheet, pipe and manufactured forms. Nickel, 6c. a lb. Quicksilver, 7c. a lb. Spelter or zinc, 1½c a lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

Minerals.—Duties are: Asphalt, crude, $1.50 per ton, and refined $3 per ton. Coal, bituminous, 67c. long ton; coke, 20% ad. val. Cement, Roman Portland and hydraulic, in bulk, 8c. per 100 lbs. and in packages 7c. Copper sulphate, ½c. a lb. Salt, in bulk, 8c. per 100 lbs., and in bags, etc., 12c. Brimstone, anthracite coal, graphite, phosphate rock, pyrites and nitrate of soda are free of duty.

Other Metals.

Daily Prices of Metals in New York.

October.	Sterling Exchange.	Silver. Fine oz. Cts.	Silver. London, Pence.	Copper. Lake, cts. ₩ lb.	Copper. Electrolytic ₩ lb.	Copper. London, £ ₩ ton.	Tin, cts. ₩ lb.	Lead, cts. ₩ lb.	Spelter. N. Y. cts. ₩ lb.	Spelter. St. L. cts.. ₩ lb.
5	4.85⅛	57⅞	26¾	16½	16¼	....	24⅜	4.32½ @4.37½	4.20	4.05
7	4.85⅝	57¾	26¾	16½	16¼	62⅞	24	4.32½ @4.37½	4.20	4.05
8	4.85⅞	57¾	26½	16½	16¼	63⅛	24⅛	4.32½ @4.37½	4.22½	4.07½
9	4.85⅞	57¾	26½	16⅛ @16¾	16¼	63⅝	24¼	4.32½ @4.37½	4.22½	4.07½
10	4.86	57¾	26½	16⅛ @16¾	16¼	64	24⅝	4.32½ @4 37½	4.25	4.10
11	4.86¼	57⅝	26⅝	16⅛ @16¾	16¼	64⅜	24⅞	4.32½ @4.37½	4.25	4.10

London quotations are per long ton (2,240 lbs.) standard copper which is now the equivalent of the former g. m b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The steadier tone which was already apparent when we last went to press, has made further progress. There is a disposition on the part of manufacturers both here and abroad to operate more freely. We learn of a number of purchases for early shipment, as well as for deliveries extending over the balance of the year. The opinion that there will be no change in prices is now quite general, and this will no doubt result in still greater activity. We quote Lake copper at 16½@16¾c.; electrolytic in cakes, wirebars and ingots at 16¼c., in cathodes at 16c.; casting copper at 15⅞c.

In London values have improved a little. Standard copper, which closed last week at £63 12s. 6d. for spot, £63 11s. 3d. for three months, opened 5s. lower, but by Wednesday had recovered this loss, and by Thursday advanced to £64 for spot, £63 12s. 6d. for three months. The closing prices to-day are £64 7s. 6d. for spot and £64 for three months.

Refined and mainufactured sorts we quote: English tough, £71@£71 10s.; best selected, £72 @£72 10s.; strong sheets, £82; India sheets, £78; yellow metal, 6¼d.

Exports of copper from New York and Baltimore, as reported by our special correspondents during the current week, were: Germany, 585 tons; Holland, 835 tons; England, 278 tons; France, 125 tons; Italy, 100 tons; Australia, 20 tons; total, 1,943 tons. Of matte, 120 tons were exported to England.

Imports were 328 tons copper from Mexico and 2,805 tons ore from Tilt Cove.

Tin.—Early in the week prices were low, in sympathy with the decline in London; and when that market advanced, toward the middle of the week, values here did not improve to the same extent. Consumers confine their purchases to their immediate wants only. Confidence as to the future of the market seems to be lacking, for the reason that while spot tin in London had at one time advanced nearly £4 from the lowest, the three months' option has lagged behind and is now selling at a discount of nearly £7 as compared with one of only £2 at the end of last week. Prices have fluctuated between 24 and 24⅝c. At the close, we quote spot tin at 24⅞c., futures at 24½c.

The London market, which closed last week at £111 for spot, £108 12s. 6d. for three months, opened at £109 15s. for spot, £106 7s. 6d. for three months. On Tuesday spot tin went up £2, while three months' advanced only 10s. On Wednesday spot tin was £112 5s., three months £107; on Thursday spot was £112 15s., and three months £106 5s., and at the close the quotations are cabled as £114 for spot, £107 10s. for three months.

Lead is without change. We quote St. Louis, 4.27½@4.32½c., New York, 4.32½@4.37½c.

The foreign market is somewhat lower, Spanish lead being quoted at £11 15s., English lead 2s. 6d. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is steady; chemical and Missouri brands bring 4.27½c. and desilverized lead 4.32½c. Trading continues to be of a retail character.

Spelter.—The market continues to advance. Consumption is very good and the prospects for the near future are favorable. There appears to be little metal over for delivery during this and next month. The ruling quotations are 4.10c. St. Louis, 4.25c. New York.

The foreign market has also advanced somewhat, good ordinaries being quoted at £17 2s. 6d., and 5s. higher for specials.

Antimony is unchanged. We quote Cookson's at 10@10½c.; Hallett's 8½c.; Hungarian, Japanese, Italian and U. S. Star, 8⅜c.

Nickel.—The price contiues firm at 50@60c. per lb., according to size and terms of order.

Platinum.—Consumption continues good and prices are strong. Ingot platinum in large lots brings $20@$21 per ounce in New York. In London prices are about on a parity with the New York rate.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 82c. per gram.

Quicksilver.—The nominal quotation in New York continues $51 per flask, but the metal can still be had for somewhat less, $49.50 for large orders. In San Francisco the quotations are $47@$48 per flask for domestic trade, and $43@$44 for export. The London quotation is £9 per flask, with the same price quoted from second hands.

Imports of quicksilver into Great Britain in the eight months ended August 31st were reported as 2,535,871 lbs., which compares with 398,218 lbs. in the corresponding period last year; showing an increase of 2,137,653 lbs. in 1901. Re-exports in the eight months were 1,372,865 lbs., against 1,108,888 lbs. last year; being an increase in 1901 of 263,977 lbs.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

Aluminum.	Per lb.		Per lb
No. 1, 99% ingots	33@37c.	Ferro-tungsten (37%)	28c.
No. 2, 90% ingots	31@34c.	Magnesium	$2.75@$3
Rolled sheets	42c. up	Manganese (over 99%)	$1.00
Alum.-bronze	20@23c.	Mangan'e Cop (20% Mn)	32c.
Nickel-alum	33@39c	Mangan e Cop (30% Mn)	38c
Bismuth	$1.50	Molyblenum (Best)	$1.82
Chromium (over 99%)	1.00	Phosphorus	50c.
Copper red oxide	50c.	American	70c.
Ferro-Moly b'um (50%)	$1.25	Sodium, metal	65c.
Ferro-Titanium (10%)	90c.	Tungsten (Best)	62c.
Ferro-Titanium (20%)	$1.00		

Variations in prices depend chiefly on the size of the order.

LATE NEWS.

Rhodesia.

The report of the Rhodesia Chamber of Mines for July shows 7 operating mines in Metabeleland and 3 in Mashonaland. The production of gold for the month was 14,833 oz. crude from 21,981 tons of ore milled—an average of 0.68 oz. to the ton—and 768 oz. from 4,266 tons tailings cyanided, a total of 15,651 oz., or 0.71 oz. to the ton milled. For the seven months ending July 31st the production reported was 97,296 oz. crude, which compares with 41,694 oz. for the corresponding period in 1900. The total this year was equal to 86,593 oz. fine gold,, or $1,789,877.

Tasmania.

Government Geologist W. H. Twelvetrees reports the quantities of metals and minerals raised and exported during the quarter ending June 30th and the half-year ending June 30, 1901, as in the table below:

		Quarter.	Half-year.
Gold produced	Oz.	14,294	26,737
Gold ore exported	Tons.	84	152
Silver ore exported	"	4,291	6,582
Blister copper exported	"	2,402	4,660
Copper ore exported	"	2,983	6,633
Iron ore exported	"	210	210
Coal raised	"	12,750	16,146
Silver-lead bullion exported	"	1,070	1,278
Tin ore exported	"	5	8
Tin exported	"	387	822
Asbestos exported	"	10	47
Oxide mineral exported	"	.....	1

The total estimated value of these mineral products for the quarter was £465,110, or £59,761 more than in the corresponding quarter of 1900. For the first half of 1901 the total values were £874,913, about one-half of this being in copper. For the second quarter copper, silver ore and tin showed increases, while there was a falling off in gold and tin. The copper was mainly from the mines in the Mount Lyell District.

THE AWARDS IN THE MINES EXHIBIT AT THE PAN-AMERICAN EXPOSITION.

We give below the list of awards in the Mines Exhibit at the Pan-American Exposition, the official report of which has been received by telegraph just as we go to press:

JURORS.

John Birkinbine, chairman; Juan D. Fleury, J. A. Holmes, Jefferson Middleton, Heinrich Ries, Guillermo Yunge.

EXHIBITORS HORS CONCOURS.

Massachusetts Institute of Technology, Boston, president of institute chairman of superior jury.

United States Geological Survey, Washington, D. C., an officer of survey member of superior jury.

Gold Medals.

UNITED STATES.

American Turquoise Co., New York City, collection of turquoises.

American Steel & Wire Co., Chicago, Ill., steel and finished steel products.

Acheson, Edward G., Niagara Falls, artificial graphite and carborundum.

American Cement Co., The, Philadelphia, Pa., Giant Portland cement.

Barber Asphalt Paving Co., The, New York City, crude and refined asphalt.

Calumet & Hecla Mining Co., Buffalo, cast copper with tests.

Cleveland Stone Co., The, Cleveland, O., sandstone used in architecture and grindstones.

Copper Queen Consolidated Mining Co., New York City, copper ores and products.

Drake Co., The, St. Paul, Minn., polished silicified wood.

Galena Oil Co. & Signal Oil Co., Franklin, Pa., railway oils for lubricating and signaling.

Hillers, J. K., Washington, D. C., geological and landscape colored transparencies.

Howell, Edwin E., Washington, D. C., relief maps and models.

Lidgerwood Mfg. Co., 96 Liberty street, New York, hoisting and mining engines.

Lehigh Portland Cement Co., Allentown, Pa., Portland cement.

Maryland Geological Survey, Baltimore, Md., exhibit of geological specimens, mineral products, maps, photographs and transparencies illustrative of the geology and mineral resources of Maryland.

Norton Emery Wheel Co., Worcester, Mass., corundum wheels.

Niagara Falls Power Co., Niagara Falls, collection of various products made at Niagara Falls with the electric current.

New York State Museum, Albany, N. Y., publications and exhibit of fossil sponges and crustacea.

New Jersey Geological Survey, Trenton, N. J., topographic maps and model.

New Jersey Slate Co., Newton, N. J., roofing slate.

Pratt, Joseph Hyde, Chapel Hill, N. C., exhibit of North Carolina gems and gem minerals, and a collection of corundum specimens from all parts of the world.

Pike Manufacturing Co., Pike Station, N. H., corundum specimens and products.

Rand Drill Co., New York City, rock drills, tripod quarry and shaft bars and drift bolt driver and air hammers.

Reeves, Paul S., & Son, Philadelphia, bronze, babbit metals and castings.

Rogers, Brown & Co., Buffalo, raw material, pig iron and products.

Standard Oil Co., The, New York City, exhibit of petroleum and its products.

Tiffany & Co., New York City, exhibit of precious stones in both the cut and rough states.

Union Akron Cement Co., The, Buffalo, Akron Star brand cement.

Vacuum Oil Co., Rochester, N. Y., exhibit of petroleum oils used in manufacture of leather.

Worcester Salt Co., Silver Springs, N. Y., Worcester Salt.

ARGENTINA.

Moreno, Enrique G., Buenos Ayres, exhibit of onyx slabs.

BOLIVIA.

Bolivia, Government of, collective exhibit of gold, silver, copper, tin and bismuth.

BRAZIL.

Medrado, Alcides, exhibit of Brazilian minerals illustrative of the resources of Brazil.

CANADA.

Mica Boiler Covering Co., Montreal, Que., mica covering for boilers and steam pipes.

Ontario Bureau of Mines, The, Toronto, Ont., general exhibit of economic ores and minerals, maps and photographs illustrative of mineral resources of Ontario.

CHILE.

Commission of Chile, Santiago, collective exhibit of the mineral resources of the country.

Delegacion Fiscal de Salitreras; Association Salitrera de Propaganda, Santiago, exhibit of photographs, charts, models and specimens illustrative of the nitrate industry of Chili.

HONDURAS.

Government of Honduras, collective exhibit of ores and minerals, maps and charts.

MEXICO.

Government of the United States of Mexico, Mexico, Federal District, exhibit of minerals illustrative of the resources of Mexico.

Oliman, Manuel, Puebla, State of Puebla, Mexican onyx.

Instituto Geologico, Mexico, Federal District, geological charts, reports and collections.

Silver Medals.

UNITED STATES.

American Quarries Co., Chicago, oolitic limestone.

Baker & Co., Newark, N. J., platinum metals and products.

Chamber of Commerce, Los Angeles, Cal., general exhibit.

Coons, Miss Altha T., Washington, D. C., exhibit of iridosmium.

Crawford & Newby, Buffalo, water colors of mines, etc.

Diamond Drill & Machine Co., Birdsboro, Pa., diamond drill and ore and rock crusher.

Delaware, Lackawanna & Western R. R., Coal Department, coal car containing model of breaker and mine in operation; samples of coal and collection of fossil plants.

Eaton, L. B., & Co., Nevada, turquoise, both in rough and polished.

Georgia, State of, exhibit of minerals from Georgia.

Georgia, State of, exhibit of building stones.

Johns, H. W., Mfg. Co., New York City, exhibit showing evolution of asbestos.

Johnston, W. J., New York City, "Mining and Metallurgy."

Kesseler Bros., San Francisco, Cal., onyx.

Lehigh Valley Coal Co., Buffalo, collective exhibit of anthracite coal.

Michigan College of Mines, Houghton, Mich., collective exhibit of ores, minerals and photographs illustrative of the mineral resources of Michigan.

Minnesota, Board of Pan-American Managers of, collective exhibit of iron ores illustrative of the iron resources of Minnesota.

Minnesota, State of, collective exhibit of mineral products illustrative of the mineral resources of Minnesota.

Mellis, Fred R., Baker City, Ore., collective exhibit of gold nuggets and gold specimens.

Missouri, State of, collective mineral exhibit.

Missouri, State of, collection of calcite, galena and blende crystals.
Mine & Smelter Supply Co., Denver, Colo., Durkee electrically driven rock drill.
"Mines and Minerals," Scranton, Pa., historical exhibit of safety lamps.
Markle Lead Co., St. Louis, shot, metal and clay products.
Minnesota Sandstone Co., Minneapolis, Minn., sandstone and stone mantels.
New York State Museum, Albany, N. Y., exhibit of mineral products illustrative of mineral resources of State.
National Webb Tile Sewer Co., Syracuse, N. Y., sectional sewer pipe.
New Jersey Geological Survey, Trenton, N. J., exhibit of reports, maps and specimens illustrative of the mineral resources of the State.
New York State Museum, Albany, N. Y., building stones.
Nevada, State of, collective exhibit of minerals.
Oregon, State of, collective exhibit of gold and silver ores illustrative of the resources of the State.
Ohm, Frederick C., Washington, D. C., large rock sections.
Palmer, H. S., & Son, New York City, working model of concrete building blocks.
Pacific Coast Borax Co., New York City, borax.
Parker, E. W., Washington, D. C., statistical charts and diagrams illustrating mineral products of United States.
Transcendent Light Co., New York City, incandescent kerosene lamps.
University of Chicago, Chicago, exhibit of minerals representing the silicate group.
U. S. Marble Co., Spokane, Wash., exhibit of serpentine.
Wood, T. S., Leadville, Colo., collection of gold nuggets.
Woods Investment Co., Victor, Colo., collection of gold ores from Cripple Creek.
Westmoreland Coal Co., Philadelphia, exhibit of bituminous coal and by-products obtained in coke manufacture.

BOLIVIA.

Bolivian Government, La Paz, borax.
Sainz, Pastor, Llallagua, exhibit of tin ores and their products.

BRAZIL.

Medrado, Alcides, exhibit of manganese ores.

CANADA.

Canadian Goldfields Co., Ltd., Doloro, Ont., exhibit of gold and arsenic ores.
Ontario Bureau of Mines, Toronto, collection of nickel-copper ores and their products.
Canada Corundum Co., Toronto, Ont., corundum and corundum products.
Hamilton Steel & Iron Co., Hamilton, Ont., iron and steel, with ores.
Lake Superior Power Co., Sault Ste. Marie, Ont., map of Ontario, charts, pig iron and iron ores.
Milton Pressed Brick & Terra Cotta Co., Milton, Ont., pressed brick and terra cotta.
Ontario Graphite Co., Ottawa, Ont., graphite and products.

CHILE.

Arauco Co., Ltd., The, Caronel, coal and coal briquettes.
Copiapo Mining Co., The, Copiapo, exhibit of photographs and plans of copper mines.
Compania Esplotadora de Lota y Coronel, Lota, earthenware.
Compania Esplotadora de Lota y Coronel, Lota, coal, fireclay and copper.
Latrille, Francisco, Antofagasta, ores and geological specimens.
Maestranza del F. C. de Copiapo, Caldera, parts of mining machinery.
Sociedad Chilena de Fundicion, Valparaiso, photographs and plans of copper mines.

CUBA.

Secretary of Agriculture, Habana, exhibit of the mineral resources of Cuba.

ECUADOR.

Aviles, F. Garcia, Guayaquil, pumice stone.
Government, Quito, collection of minerals.
South American Development Co., Zaruma, mineral ores.

GUATEMALA.

Horta, Jose et Cia., Guatemala, collection of minerals.

HONDURAS.

Pauli, Carlos, Tegucigalpa, mining map.

MEXICO.

Cardenas, Amador, Jimulco, State of Coahuila, Mexican onyx.
Compania Minera de Panuco, Mazatlan, State of Sinaloa, collection of silver ores.
Compania de Real del Monte y Pachuca, Pachuca, State of Hidalgo, collection of silver ores, photographs, maps, salts and building stones.
Compania Minera del Boleo, Santa Rosalia, Territory of Lower California, copper ores.
Government of the State of Aguascalientes, Aguascalientes, copper ore collection.
Government of the State of Chihuahua, Chihuahua, collection of silver, copper and lead ores.
Government of the State of Durango, Durango, collective exhibit of minerals.
Government of the State of Guanajuato, Guanajuato, collection of minerals.
Government of the State of Mexico, Toluca, collection of silver ores and building stones.
Government of the State of San Luis Potosi, San Luis Potosi, collection of ores.
Government of the State of Sinaloa, Culiacan, collection of silver ores.
Government of the State of Zacatecas, Zacatecas, collection of silver ores.
Martinez Baca, Eduardo, Mexico, Federal District, collection of ores and minerals.
Negociacion de Sauceda, Zacatecas, State of Zacatecas, collection of silver ores.
Sellerier, Carlos, Mexico, Federal District, data referring to mining and a metallic ore collection.

NICARAGUA.

Government of Nicaragua, Managua, collective exhibit of minerals illustrating the mineral resources of Nicaragua.

Bronze Medals.

UNITED STATES.

Alabama, State of, collective exhibit of coke, iron ores and pig iron.
Armour & Co., Chicago, sand, garnet and emery paper.
Aluminum Lustre Co., Carson City, Nev., diatomaceous earth.
Bell, F., Terre Haute, Ind., exhibit of gold nuggets and gold quartz from Honduras.
Burlington Coal Co., Burlington, N. D., vitrified and fire brick.
Brooks, Alfred H., Washington, D. C., collection of photographs and specimens from Cape Nome, Alaska, illustrating gold-mine operations.
California State Mining Bureau, San Francisco, collective exhibit of ores illustrative of mineral resources of California.
California State Board of Trade, San Francisco, photographs of mines.
Doe Run Lead Co., Doe Run, Mo., lead ores and concentrates.
Dickinson Brick Co., Dickinson, N. D., firebrick, clay and clay products.
East Bangor Consolidated Slate Co., East Bangor, Pa., slate.
Graves, Fayette P., Doe Run, Mo., collection of Missouri minerals.
Georgia, State of, collective exhibit of gold nuggets and gems.
Granby Mining and Smelting Co., Oronogo, Mo., zinc concentrates.
Hanna Oil & Mfg. Co., Chicago, oils and greases.
Idaho, State of, exhibit of ores and minerals illustrative of the mineral resources of Idaho.
Inyo Development Co., Carson City, Nev., soda crystals and soda ash.
Louisiana, State of, collective exhibit of mineral products.
McKenna Bros., Pittsburg, Pa., laboratory ore grinder.
Manistique Iron Co., Manistique, Mich., charcoal, iron and "Radnor Water."
N. Y. State Museum, Albany, N. Y., exhibit of crude and manufactured gypsum samples.
N. Y. State Museum, Albany, N. Y., exhibit of mineral paint.
Newberg Pressed Brick & Clay Co., Newberg, Ore., exhibit of building brick and terra cotta.
N. Y. State Museum, Albany, N. Y., clays, shales and their products.
N. Y. State Museum, Albany, N. Y., exhibit of salts.
N. Y. State Museum, Albany, N. Y., exhibit of limestone and cements.
N. Y. State Museum, Albany, N. Y., exhibit of abrasives.
N. Y. State Museum, Albany, N. Y., petroleum samples.
N. Y. State Museum, Albany, N. Y., slate of different colors.
Oregon, State of, exhibit of building stone.
Oregon, State of, mineral waters.
Rich Hill Zinc Works, Rich Hill, Mo., zinc furnace produce.
Rees & Seawel, Yelville, Ark., zinc ores.
Reidel & Heggele, Portland, Ore., building stone.
State University, Moscow, Idaho, stamp and concentrating mill.
St. Francois Co., Missouri, collective exhibit of minerals.
St. Joseph Lead Co., Bonne Terre, Mo., lead and lead ores.
Sills-Eddy Mica Co., New York City, samples of mica mined in U. S.
Union Iron Works, San Francisco, model of quartz mill.
Royal Blue Mines, The, Joplin, Mo., exhibit of zinc and lead ores.
Russell, H. M., Los Angeles, Cal., gold quartz.
Richmond, William H., Scranton, Pa., photograph of coal breaker and steel tower.
Southwest Miners' Association, Los Angeles, Cal., exhibit of minerals.
Six Eagles Gold Mining Co., Olympia, Wash., exhibit of gold, silver, copper and lead.
Sayre, Fisher Co., Sayreville, N. J., enameled brick.
Shehan Bros., Doe Run, Mo., granite from St. Francois County.
Shedd, S., Pullman, Wash., relief map of Washington.
Union Mining Co., Mt. Savage, Md., fire brick.
Washburn, E. H., Bismarck, N. D., lignite from North Dakota.
Washington, State of, exhibit of ores and minerals.
Winkle Terra Cotta Co., St. Louis, terra cotta work.

ARGENTINA.

Minister of Agriculture, Buenos Ayres, collective exhibit of mineral products.
Union Industrial Argentina, Buenos Ayres, collective exhibit of mineral products.

BOLIVIA.

Carreras, Hermanos, Corocoro, exhibit of copper ores.
Child & Co., Corocoro, exhibit of copper ores and their products.
Dulleich, Soux & Co., Potosi, exhibit of silver and tin ores.
Government of Bolivia, La Paz, collective exhibit of gold ores.
Huanchaca Co., Huanchaca, exhibit of silver ores.
Marquiqui, Corocoro, exhibit of copper ores.
Sucesion de Noel Berthin, Guallatiti, Corocoro, exhibit of copper ores.

BRAZIL.

Medrado, Alcides, diamonds in conglomerate from Brazil.
Medrado, Alcides, exhibit of iron ores from Brazil.

CANADA.

Nickel Copper Co., The, Hamilton, Ont., exhibit of ores and products illustrative of the various operations in the reduction of nickel and copper by the Frasch process.
Bureau of Mines, Toronto, Ont., exhibit of mica.
Imperial Oil Co., The, Sarnia, Ont., exhibit of Ontario petroleum and its products.
Peat Development Syndicate, The, Toronto, Ont., exhibit of peat and its products.
Stewart Granite Works, T. J., Hamilton, Ont., carved and polished syenite.

CHILE.

Cousino, Carlos, Santiago, Portland cement.
Compania Industrial de Atacama, Copiapo, copper ores and products.
Cunningham, Tomas, Coquimbo, building stone.
Fuenzalida, Carlos, La Serena, fuel briquette.
Geiger & Maurer, Calera, Portland cement.
Harnecker, Otto, Ligua, copper ores and products.
Laso, J. Tadeo, Santiago, series of samples showing the sea sands of the entire coast of Chile.
Mina "Elsa de Bordos," Copiapo, silver ores and plan of mine.
Morande, Salvador, Santiago, manufactured stones and brick.
Lambert, Sucesion, Serena, copper ores and products.
Piedro & Co., Caldera, copper ores.
Roca & Cruz, Santiago, manufactured stones and bricks.
Santiago, Merry, Serena, lapis lazulis.
Surrutia i Odde e hijo, Santiago, marbles.
Sallarroel, Arturo, Santiago, limestone.

CUBA.

Adams, Henry, Puerto Principe, exhibit of copper and lead ores.
Ageo, Jose, Caibarien, exhibit of pottery and tiles
Funnel, Smith & Rovirosa, Habana, exhibit of asphalt of Banes.
L'Almendares, Habana, exhibit of cement.
Secretary of Agriculture, Habana, collective exhibit of minerals.
Widow of Capdevila, Habana, exhibit of clay works and bricks.

DOMNICIAN REPUBLIC.

Dominican Republic, for a collective exhibit of mineral products.

ECUADOR.

Braxallo, S., Zaruma, mineral ores.
Government, Cuenca, pure gold, minerals and asphalt.
Gomez, Rosendo, St. Elena, pitch and liquid asphalt.
Estrada, Emilio, Guayaquil, cement.

EL SALVADOR.

Republic of El Salvador, San Salvador, collective exhibit of mineral products.

GUATEMALA.

Ubico & Cia., A. J., Guatemala, zinc et plomb argentifere.

HONDURAS.

Government of Honduras, exhibit of gold and iron ores.
Government of Honduras, exhibit of iron ores.

MEXICO.

Compania de Cal Hidrualica, Cemento y Materiales de Construccion, Mexico, Federal District, building material.
Compania de Cardon de Coahuila, El Hondo, State of Coahuila, coal.
Compania de Fundicion de Fierro y Manufacturera de Monterey, Monterey, State of Nuevo Leon, exhibit of mining car.
Compania Francesca Minera de San Pedro, Altar, State of Sonora, collection of ores.
Compania Minera "Cruz y Anexas," Mexico, Federal District, collection of quicksilver ores and native sulphur.
Creston Colorado Mining Co., The, Hermosillo, State of Sonora, exhibit of gold and silver ores.
Descubridora Mining Company, Mapimi, State of Durango, collection of copper ores.
Garcia, Trinidad, Mexico, Federal District, mineral collection.
Government of the State of Morelos, Cuernavaca, building stones.
Gran Fundicion Central de Aguascalientes, Aguascalientes, State of Aguascalientes, collection of copper and gold ores; copper, gold and silver ingots, and foundry products.
La Dura Mill & Mining Co., Alamos, State of Sonora, collection of lead and silver ores.
Lejeune, Fernando, Minillas, State of Zacatecas, collection of lead and silver ores.
Mendoza, Presbitero, Guanajuato, State of Guanajuato, collection of minerals.
Mexican Gold & Silver Recovery Company, Hermosillo, State of Sonora, collection of gold and silver ores.
Mezquital Mining Company, Mezquital del Oro, State of Zacatecas, collection of gold and silver ores.
Negociacion de Avina, Durango, State of Durango, collection of silver and copper ores.
Negociacion de Candelaria y Anexas, Pinos, State of Zacatecas, collection of gold and silver ores.
Negociacion de Catorce, Catorce, State of San Luis Potosi, collection of silver ores.
Negociacion Minera del Progreso, Triunfo, Territory of Lower California, collection of gold and silver ores.
Negociacion Promotorio, Durango, State of Durango, collection of lead and silver ores.
Proprietario de la Hacienda los Otates, Guanajuato, State of Guanajuato, building stone.
Rule, Francisco, Pachua, State of Hidalgo, collection of silver ores and mining maps.
San Carlos Mining Company, San Jose, State of Tamaulipas, collection of copper ores.
Santa Cruz, Francisco, Salima, State of Colima, building stone and marble.
Sombrerete Mining Company, Sombrerete, State of Zacatecas, collection of metallic ores.
Tipografia de la Secretaria de Fomento, Mexico, gold ores.

NICARAGUA.

Alfaro, Alberto, Jinotega, exhibit of pure gold.
Campania de Santa Francisca, Leon, collection of mineral ores.

PERU.

Backus & Johnson Co., The, Casapalca, exhibit of lead and silver ores from Casapalca Mine.
Garragarri & Co., Lima, coal.
Sociedad Nacional de Minera, Lima, exhibit of ores illustrative of mineral resources of Peru.

PORTO RICO.

Insular Government of Porto Rico, San Juan, collection of iron and copper ores.

STOCK QUOTATIONS.

NEW YORK.

NAME OF COMPANY.	Location.	Par val.	Oct. 4. H.	Oct. 4. L.	Oct. 5. H.	Oct. 5. L.	Oct. 7. H.	Oct. 7. L.	Oct. 8. H.	Oct. 8. L.	Oct. 9. H.	Oct. 9. L.	Oct. 10. H.	Oct. 10. L.	Sales
Alamo	Colo.	1			.15										300
Amalgamated c.	Mont.	$100	90 00	86.75	88.75	84.50	86.25	83.38	87.88	85.13	87.25	85.25	89.13		354320
Anaconda, c.	Mont.	25	36.25	35.25	36.25	35.00	36.25	34.88	35.25	34.00	35.58	34.50	36.88		27,680
Anaconda Gold.	Colo.	5									.28				500
Breece	Colo.	25					1.50								100
Brunswick	Cal.	1			.08		.08		.08		.08				4,000
Cable Cons.	Colo.	1									.06				1,000
Comstock T.	Nev.	100							.96						200
" Bonds	Nev.	100	.07				.07								4,000
Con. Cal. & Va.	Colo.	25			1.80						1.80				400
Cripple Cr. Con.	Colo.	1	.03½				.03½		.03½		.07				2,300
Elkton	Colo.	1			1.50										300
Fanny R	Colo.	1									.19				500
Gold Dollar	Colo.	1							.20		.20				1,500
Gold Fleece	Colo.	1							.56						500
Hale & Norcross	Nev.	3													
Iron Silver	Colo.	20													
Isabella	Colo.	1					.45		.44						800
Little Chief	Colo.	1	.13						.12						200
Mollie Gibson	Colo.	5	.39												500
Ontario	Utah.	100	11 63	11.00	11.75	11.50	11.50		11.58		11.50	11.25			780
Ophir	Nev.	8			.80										100
Pharmacist	Colo.	1													
Phoenix, g	Ariz.	1							.07						300
Portland	Colo.	1			2.35										200
Quicksilver	Cal.	100	3.75	3.50					3.75	3.50					200
" pf.	Cal.	100	10.50				10.50								200
Small Hopes	Colo.	20	.45												50
Standard Con	Cal.	10	8.60												150
Union Copper	N. C.	10	4½	4½	4¾	4½	4⅞	4⅝	4⅞	4⅝	4⅝	4½			1,800
Work	Colo.	1	.13⅛				.14								2,000
Yellow Jacket	Nev.	8									.10				300

COAL AND INDUSTRIAL STOCKS.

Am. Agr. Chem.	U. S.	$100	28		22						24		23	20	200
" " " pf	"	100	85		85		81		81		85		23	80	
Am. Car & Fdy.	"	100													
" " pf	"	100													
Am. Sm. & Ref.	"	100	41½	39¼	41¾	39⅞	39¾	39½	40⅝	39⅝	41	40¼	42¼		48,050
" " pf		100	94½	94¼	95½		96	95	96⅜	95¾	96		97		2,260
Col. Fuel & I.	Colo.	100	91⅜	90	92	90½	92	89¾			92	91	93		10,450
Col. & H. C. & I.	"	100	16	15			16		16¾	16½			17¾		1,300
Int'l S. Pump.	U. S.	100	45	43	44¾		44		45	44	44		46		1,800
" " " pf.	"	100													
*Mong. R. Coal.	Pa.	100	18		13¾	13½	13¼	13	13	12⅞					350
" " " pf	"	100	47		47		47		47						
National Lead.	U. S.	100	19⅝	19¾	19⅞	19¾	19⅞				19½		19½		1,600
" " pf	"	100	86		110										110
National Salt.	"	100	35	29½	35	31½	34½		33⅜	33¼	33	31¼	31		1,640
" " pf	"	100							70	68¾			61¾		1,155
*Pittsburg Coal.	Pa.	109	30⅜	29½	30	29½	29⅝		30	29					2,656
" " pf	"	100	94⅜	94½	94⅜	94½	94¼	94	94¼	94					766
Pressed St. Car.	"	100													
Republic I. & S.	U. S.	100	15	14½	14¾	14½	14⅜	14¼	14½	14¼	14⅜	14¼	14¾		5,700
" " pf	"	100	66¾	65¼	65½	65¼	65¼	64	64⅝	64	65	65	66		4,350
Sloss-Sheff S. & I.	Ala.	100													
" " pf.	"	100													
Standard Oil.	U. S.	100	726	722	725	720	720	715	700	695	695	689	715	705	200
Tenn. C. I. & R. R	Ala.	100	59⅜	58½	60	58½	58¾	56½	59⅛	58	58¾	58			20,210
U. S. Steel Corp	U. S.	100	43½	42¾	43¾	42¾	42⅛	41¾	42⅞	42	42¾	42⅛	43¼		109585
" " pf.	"	100	93⅜	92½	93⅝	92¾	92¾	92	93	92⅜	93¼	92⅜	93¾		52,457
Va.-Car. Chem.	"	100	59		60	57	60¼	57	60¼	57	60¼	57	61		100
" " pf.	"	100					123	118	125	120	124	118			

On Pittsburg, Pa., Exchange. Total sales, 719,819 shares.

PHILADELPHIA, PA.§

NAME OF COMPANY.	L'cation.	Par Val.	Oct. 3. H.	Oct. 3. L.	Oct. 4. H.	Oct. 4. L.	Oct. 5. H.	Oct. 5. L.	Oct. 7. H.	Oct. 7. L.	Oct. 8. H.	Oct. 8. L.	Oct. 9. H.	Oct. 9. L.	Sales
Am. Alkali		$50	.88		.75								.83	.75	500
Am. Cement		10	6.75	6.63	6.75	6.50	6.75		6.50						940
Bethlehem Iron.	Pa.	50	72.50	72.25			61.50		61.50		61.00		61.50		101
Bethlehem Steel	"	50													
Cambria Iron	"	50	47.25				47.25								39
Cambria Steel	"	50	25.50	25.13	25.13	25.00	25.13		25.88		25.63	25.38	25.75	25.50	5,852
Susq. I. & S.	"	10	1.88						1.88		1.88		1.88		480
United Gas I.	"	50	115	114¾	114¾	114¼			114½	114	114¼	114	114¼		189

Total shares sold, 8,071. § Reported by Townsend, Whelen & Co, 309 Walnut St., Philadelphia.

CALIFORNIA OIL STOCKS.*

Name of Company.	Shares Issued	Par Val.	Sept. 10. H.	Sept. 10. L.	Sept. 11. H.	Sept. 11. L.	Sept. 12. H	Sept. 12. L.	Sept. 13. H.	Sept. 13. L.	Sept. 14. H.	Sept. 14. L.	Sept. 16. H.	Sept. 16. L.	Sales
Blue Goose	5,000	$100					1.60								
Buckhorn	16,000	10.00			5.00		5.00		5.00						
Cal. Standard	500,000	1.00	.25	.22	.23	.22	.23	.22	.24	.22					2,500
Caribou	80,000	1.00	.88	.75	.75		.75	.73	.71						
El Dorado	100,000	1.00	1.00	.60	.95		.95	.94	1.00	.80					
Four	300,000	1.00	.41	.40	.41	.40	.41	.40	.41	.40					1,443
Hanford	2,000	10.00	121.	120.	120.	115.	125.	117.	125.	119.					14
Home	100,000	1.00	3.75	3.65	3.75	3.65	3.75	3 60	3.75	3.60					850
Homestake	10,000	10.00	8.50				9.00		9.00						
Independence	500,000	1.00	.11	.10	.11	.10	.12	.10	.12	.10					7,600
Junction	250,000	1.00	.30	.24	.23	.22	.25	.24	.27	.24					7,400
Kern	100,000	1.00	6.00	5.50	5.75	5.50	5.75	5.50	5.75	5.50					
Kern River	20,000	5.00	12.00	7.00	12.00	7.00	10.00	7.00	9.50	6.75					
Lion	240,000	1.00	.09	.08	.10	.08	.10	.09	.10	.08					4,160
McKittrick	500,000	1.00			.26				.26	.22					
Monarch	300,000	1.00	.26	.21	.24	.21	.24	.21	.24	.22					2,300
Monte Cristo	407,600	1.00	1.95	1.75	2.00	1.78	1.90	1.75	2.00	1.75					
Occidental	600,000	3.00	.45	.40	.45	.41	.50	.43	.50	.40					950
Oil City Petrol	500,000	1.00	.29	.28	.30	.25	.30	.28	.29	.28					300
Peerless	373,000	10.	5.25	5.00	5.50	5.00	5.50	5.18	5.38	5.13					1,350
Petro. Center.	500,000	1.00	.02	.01	.03	.02	.03	.01	.03	.01					3,000
San Joaquin	100,000	1.00	8.50	8 00	8.25	7.88	8.25	7.88	8.13	7.88					50
Sterling	200,000	1.00	1.38	1.30	1.35	1.30	1.35	1.30	1.38	1.33					2,072
Sunset	100,000	5.00					.10		.25	.10					
Twenty-eight	60,000	1.25	1.80	1.65	1.70	1.65	1.70	1.65	1.80	1.65					700
Yukon	100,000	2.50	.35		.55		.10								

*Producers' Oil and San Francisco Oil Exchanges. Total sales 55,229 shares

SPOKANE, WASH.

Week Oct. 4.

NAME OF COMPANY.	Par val.	B.	A.	Sales.	NAME OF COMPANY.	Par val.	B.	A.	Sales.
Black Tail	$1	.09¼	.10⅜		Princess Maud	0.10	.01⅜	.02	84 000
Crystal	1	.08	.15	2,500	Quilp	1	.20½	.26	
Deer Trail Con.	1	.02⅜	.02¾		Rambler Cariboo	0.25	.46	.51	
Gold Ledge	1	.00⅞	.01⅛	1,000	Reservation	1	.06¾	.07	10,000
Lone Pine-Surp. Con.	1	.03⅜	.05		Sullivan	1	.09½	.10⅜	
Morning Glory	0.10	.02¾	.03		Tom Thumb	1	.13¾	.13¾	
Mountain Lion	1	.24	.27						

BOSTON, MASS.†

NAME OF COMPANY.	Par val.	Shares listed.	Oct. 3. H.	Oct. 3. L.	Oct. 4. H.	Oct. 4. L.	Oct. 5. H.	Oct. 5. L.	Oct. 7. H.	Oct. 7. L.	Oct. 8. H.	Oct. 8. L.	Oct. 9. H.	Oct. 9. L.	Sales
Adventure Con. c	$25	100,000	23.00	22.00	22.50	22.00	22.50	22.00	21.50	20.50	22.75	21.50	23.50	23.00	2,406
Aetna Con. q	5														
Allouez, c	25	80,000	2.88	2.63	2.63						2.75				475
Amalgamated, c.	100	1350.000	91.25	90.00	90.00	87.25	88.63	83.00	88.25	83.50	87.50	85.50	87.13	85.38	70,276
Am. Gold Dreg.	5	90,000													
Am. Z. L. & Sm.	25	60,000							10.00				10.00		110
Anaconda, c.	25	1200,000	37.00	36.50					35.50	34.75					285
Arcadian, c.	25	150,000	9 13	9.00	9.50	9 00	9.25	9.00	9.00	8.00	9.00				1,035
Arnold, c.	25	60,000	1.50	1.25	1.50						1.75	1.63			510
Ash Bed	25	40,000													
Atlantic, c.	25	40,000	32.50	32.00	32.00		30.50	30.25	31.00	30 00	32 00	31.00	32.50	31.75	845
Baltic	25	100,000	42.00	40.00	41.00		41.50	41.00	40.00	39.38	42.00	40.50	42.50	41.00	1,508
Bingham, Cons.	50	150,000			31.00		31 00		30.00	28.00	30.00	29.50	30.00		1,958
Bonanza Dev.	10	800,000	1.06												125
Bo ton, q.	10														
British Columbia	5	200,000			9.00										20
Cal. & Hecla, c.	25	100,000	634	650	660	645	640	635	635	630	640		640		242
Catalpa	10														
Centennial, c.	25	90,000	21.00	20.25	20.00	19.63	20.00	19.75	19.75	19.50	20.50	20.00	20.75	20.50	2,745
Central Oil	25	60,000					8.00								40
Cochiti, g.	10	193,750	3.75	3.50	3.50	3.25	3.50		3.50		4.00	3.50			1,115
Cons. Mercur, g.	5	1000,000	2.38				2.50				2.38		2.25		190
Con. Z. & L. M. & S.	10	110,000	1.60												300
Copper Range, c.	25	100,000	59.00	58.50	58.00	56..	57.00	56.00	55.00	54.00	57.50	56.00	58.00	57.00	4,287
Daly-West	20	150,000	35.00										37.00		75
Dominion Coal.	100	150,000	44.50		44.25	44.00	43.75	42.50	44.25	43.25	44.50	44.00	44.13	44.00	3 955
do. pref.	100	30,000	119						118⅜				117		85
Dominion, I. & St.	100														
Elm River, c.	12	100,000	3.50						3.50				4.00		390
Franklin, c.	25	100.000	17.00	16.50	17.00	16.50			16.75	16.50	17.00	16.50	17.00	16.88	1,345
Guanajuato Cons	5	385,000	5.38	5.25	5.50	5.25			5.88	5.13	6.50	5.50	8.50	7.00	8,875
Humboldt, c.	25	40,000											.18	.10	800
I. Royale Con., c	25	150,000	26.50	24.50	25.00	25.50	26.00	25.50	26.00	25.00	26.50	26.00	27.00	26.00	2,068
Mass Con., c.	25	100,000	25.75	24.88	25.38	24.75	25.00	24.25	24.50	23.50	25.00	24.25	25.25	24.25	8,445
Mayflower, c.	25	100,000	8.50	8.06	8.25	8.00	8.00		8.00		8.25	8.18	4.00	3.38	5,500
Merced, g.	15														
Michigan, c.	25	100,000	13.50	13.25	13.25	13.00	13.25	12.88	12.50	12.00	14.00	13.00	14.00	13.00	2,548
Mohawk, c.	25	100,000	42.50	42.00	42.00	41.25	42.00	41.50	41.00	40.25	42.50	41.50	44.50	43.50	4,002
Mont. C. & C.	25	200,000	4.25												50
National	25	100,000							2.00						100
N.E. Gas & Coke	100	100,000	7.00	6.00	6.00	5.50	5.50		6.00		6.00	5.50	6.00	5.50	1,250
Old Colony, c.		100,000			4.50	4.00	4.00		4.00		4.50	4.00	4.75	4 50	1,682
Old Dominion, c	25	150,000	28.50	27.50	28.00	27.25	28.00	26.50	27.00	25.25	27.75	26.75	27.50	26.50	4,190
Osceola, c.	25	93,000	96.50	95.00	96.50	94.00	96.00	94.00	94.50	92.50	96.50	94.50	96.75	96.50	9,811
Parrot, s c.	10	229,850	40.00		40.13	39.50	40.50	39.50	40.00	39.00	40.75	40.00	40.25	40.00	2,079
Phoenix Con., c.	25	100,000	7.25	6.50	6.50		6.00		6.00		6.00	5.88	6.50		901
Quincy, c.	25	100,000	160		160								160		60
Rhode Island, c.	25	100,000			4.25		4.25	4.00	4.00	3.75	4.50	3.88	4.50	4.00	1,880
Santa Fe, g. c.	10	250,000	5.50	4.00	5.25	4.88			5.00	4.75	5.00	4.50	5.00	4 94	1,234
San Ysabel, g.	5	130,000	.50										.50		660
Shawmut Oil	25														
Tamarack, c.	25	60,000			295	290			285	280	296	280	285		182
Tecumseh, c.	25	50,000			1.13	1.00			1.25		1 25	1.00	1.25		690
Trimountain, c.	25	100,000	41.50						41 00		43.50	42.00	45.00		153
Trinity, c.	25	160,000	27.00	24.50	26.25	25.75	26.00	25.00	25 75	25.00	24.25	23.50	26.75	26.00	5,495
United States, g.	25	250,000	16.75	16.00	16.50	16.00	16 50	16.00	16.88	15.75	16.13		16.75	16.50	2,975
U. S. Oil	25	100,000	13.00	12.25									12.00		365
Utah Con., g.	5	900,000	25.50	25.00	25.00	24.00	25.00	24.25	24.00	23.25	24.25	23.50	24.00	23 50	2,183
Victoria, g.	25	100,000	7.25	7.00	7.25	7.00	7.00		7.00	6.50	7.38	7.25	7.75	7.38	4,292
Washington, c.	25	60,000													
Winona, c.	25	100,000			2.50		2.50	2.18	2.38	2.25	2.50		2.50		895
Wolverine, c.	25	60,000	60.25	59.00	59.00	58.50	59.00	58.00	58.00	56.50	58.50	58.00	59.00	57.50	1,602
Wyandot, c.	25	100,000	1.99	1.50			1.50		1.25						215

†Official quotations Boston Stock Exchange. Total sales, 167,839 shares.

SALT LAKE CITY, UTAH.

Oct. 5.

STOCKS.	Shares.	Par val.	Bid.	Asked.	STOCKS.	Shares.	Par val.	Bid.	Asked.
Ajax	800,000	$10	$1.15	$1.29¼	Lower Mammoth	150,000	$1	$2.36	$2.88
Albion		25		.70	Mammoth	400,000	25	1.50	2.00
Alice	400,000	25			May Day	400,000	¾	1.10¾	1.40¼
Anchor	150 000	10	1.30	4.00	Northern Light	400,000	5	.02	.05
Ben Butler	500 000	10	.17¾	.18¾	Ontario	150,000	100	9.80	12.00
Boss Tweed	250,000	1	.45	.54	Sacramento	1,000,000	5	.15	.29¼
Bullion Beck & Ch.	100,000	10			Shower Con	400,000	5	.05	.20
Centennial Eureka	200,000	25			Silver King	150,000	20	77.50	85.00
Dalton	500,000	1	.03	.03½	Silver Shield			.01	.04
Daly	150,000	20	2.40	3.05	Star Consolidated	500,000	1	.33	.33½
Daly-West	150,000	20	33.00	33.00	Sunbeam	250,000	1	.35	.38
Dexter	200,000	5	.40	1.00	Swansea	100,000	5	1.50	2.00
Eagle & Blue Bell	250,000	1	1.00	1.20	South Swansea	150,000	1	.35	.53
Galena	100,000	10	.23	.40	Tesora	400,000	1	.61½	.70
Grand Central	250,000	1	3.00	4.75	Tetro	300,000	1	.23½	.29
Homestake	400,000	1			Uncle Sam Con	500,000	1	1.25	1.54½
Horn Silver	400,000	25	1.80	2.05	Utah	100,000	1	.50	.60
Joe Bowers	400,000	1	.06	.07	Valeo	200,000	1	.18	.23½
					Yankee Con	250,000	0.10	4.00	5.00

ST. LOUIS, MO.*

Oct. 8.

NAME.	Shares.	Par	Bid.	Ask.	NAME.	Shares.	Par	Bid.	Ask.
Am.-Nettie, Colo.	800,000	$10	$1.10	$1.15	Doe Run Lead, Mo.	10,000	$100	$128.00	$135.00
Catherine Lead, Mo.	50,000	10	2.50	3.50	Granite Bimetallic, Mt.	1000.000	10	2.50	2.90
Central Lead, Mo.	10,000	100	130.00	140.00	Kan. & Tex. Coal, Mo.	25,000	100	45.00	49.00
Columbia Lead, Mo.	50,000	10	12.50	13.00	Renault Lead, Mo.	30,000	10	9.50	11.00
Con. Coal, Ill	50 0.0	100	13.00	21.00	St. Joe Lead, Mo.	300.000	10	15.00	16.00

* From our special correspondent.

TORONTO, ONT.

NAME OF COMPANY.	Par val.	Oct. 1. H.	Oct. 1. L.	Oct. 2. H.	Oct. 2. L.	Oct. 3. H.	Oct. 3. L.	Oct. 4. H.	Oct. 4. L.	Oct. 5. H.	Oct. 5. L.	Oct. 7. H.	Oct. 7. L.	Sales
Ontario:														
Golden Star.	1	.04¼	.03	.03⅜	.03⅛	.04	.03¼	.03⅜	.03⅛			.03	.03⅛	1,000
Ham Reef.	1													
British Col.:														
Cariboo MK	1	.24	.22½	.24½	.22	.23	.23¼	.23	.23½			.20	.24	
Center Star.	1	.46	.45¾	.51½	.49	.51½	.50½	.51	.48			.51	.45	1,000
Crow's N. C.	25	77.50	74.50	80.00	73.00	76.50	74.50	80.00	75.00			80.00	78.00	
Deer Trail	1	.03⅜	.02½	.03¾	.02½	.03¾	.02½	.03⅜	.02½			.03	.02½	3,000
Fairview	1	.02½		.02½		.02½		.02½				.02½		
Mont & Lon	0.24											.30	.30	
Morrison	1	.03		.04½		.04	.02							
Noble Five	1	.10½	.08	.11	.08	.10	.08¼	.10½	.09			.11	.08	3,500
North Star	1	.34	.23	.33	.30	.35	.30	.33	.35			.40	.30	1,200
Payne	1	.18½	.17	.20	.15	.21	.16½	.20	.17			.23	.17	
Rambler	1	.53	.47	.55	.48	.55	.48¾	.57	.48			.55	.49	
Republic	1	.03		.03		.02⅞	.02⅝	.03				.03		1,500
Virtue	1	.21	.16	.24	.17	.25	.20½	.21	.19½			.23	.20	
War Eagle Con	1	.13	.11	.13½	.12½	.16	.12	.15	.13			.14½	.13½	
Winnipeg	1	.10	.09	.11	.08	.10½	.08	.11	.09			.10	.08	
Wonderful	1	.03½		.04		.04		.03¼				.04		
Develop Co.														
Can. G. F. S.	0.10	.05	.04	.05	.04	.05	.04	.05	.04			.05	.04	

Total sales, 10,500 shares.

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.†

Name of Company.	Par val.	Sept. 30. B.	Sept. 30. A.	Oct. 1. B.	Oct. 1. A.	Oct. 2. B.	Oct. 2. A.	Oct. 3. B.	Oct. 3. A.	Oct. 4. B.	Oct. 4. A.	Oct. 5. B.	Oct. 5. A.	Sales
Acacia	$1	.16	.15¾	.15¾	.16¼	.15¾	.15½	.15¾	.....	.15½	.16	.15⅞	.16	13,000
Alamo	1	.13½	.14	.13½	.14¼	.13⅝	.14¼	.13⅝	.14¼	.13⅝	.14¼	.13⅝	.14¼	40,000
Am. Con.	1	.04⅝	.05	.04¼	.05	.04⅜	.04⅞	.04¼	.04¾	.....	.05	.....	.04⅝	1,500
Anaconda	1	.29½	.31	.29½	.30	.28¾	.....	.....	.....	.....	.....	.27	.28	4,500
Anchor	1	.01¾	.02	.....	.02	.....	.02	.....	.02	.....	.02	.....	.02	.....
Antelope	1	.01	.....	.01	.....	.01	.....	.011¾	.02	.01¾	.02	.01¼	.02	1,000
Aola	2	.09¼	.09⅝	.08⅝	.09¼	.08	.08⅝	.08	.08¼	.02¾	.03⅛	.03	.03¼	7,700
Arg'ntum J	1	.....	.09⅝	.06	.07	.07	.07⅝	.07	.08	.08¼	.10	.08	.10	13,800
Banner	1	.....	.....	.01	.01⅝	.....	.02	.07	.02	.....	.....	.01⅝	.01	2,000
Battle Mt.C	1	.17¼	.18	.17	.17½	.17	.18	.18¼	.....	.....	.17	.17½	.17½	4,500
Black Bell	1	.09¾	.11	.....	.....	.06¾	.09¼	.07¼	.09	.07	.08	.07	.08	1,000
Blue Bell	1	.15	.15¾	.....	.15¼	.13⅜	.14¾	.....	.14¾	.13	.....	.02½	.02¾	2,000
Buckhorn	1	.03⅜	.03⅝	.....	.03¼	.03¼	.07¾	.03	.....	.03	.....	.03½	.....	.....
But'fly Terr	1	.....	.35	.....	.....	.....	.....	.....	.35	.....	.35	.....	.35	.....
Cadillac	1	.....	.02⅝	.01	.01½	.....	.01¾	.....	.01⅝	.....	.01¾	.....	.01½	.....
Central C'n	1	.09¾	.03½	.09¼	.09¾	.05⅝	.10	.08	.03½	.08	.08¾	.03⅝	.03⅝	15,000
Champion	1	.04¼	.04¾	.....	.....	.....	.04¾	.03	.04	.....	.03⅝	.03¼	.04¼	2,000
Chicolo	1	.01⅝	.01½	.....	.02	.....	.02	.....	.02	.....	.02	.....	.02	7,000
C. K. & N.	1	.01⅝	.02	.01⅝	.02	.01⅝	.02	.01⅝	.02	.01⅝	.02	.01⅝	.02	13,000
C. C.Col'bia	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
C. C. G. Ext	1	.....	.08	.....	.....	.06¾	.07⅝	.....	.07⅝	.....	.07	.....	.07	.....
C. C. & Man	1	.07¾	.07¾	.....	.....	.07½	.07¾	.....	.....	.07¾	.07½	.07¾	.07½	7,000
Creede& CC	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
C. C. Con	1	.08⅜	.08¾	.08	.08¼	.07	.08	.07¾	.08	.07¾	.07¾	.07½	.....	14,000
Dante	1	.05	.05¾	.05	.05½	.....	.05	.05	.05	.04¾	.05	.05¼	.05	10,000
Dr. Ja'k P't	1	.53½	.56	.55¼	.55¾	.53	.55¼	.54½	.55	.53	.53½	.51½	.53½	10,630
Eclipse	1	.11⅝	.....	.11⅝	.11⅞	.11⅝	.11⅞	.11⅝	.12	.11⅞	.12	.11¾	.12	22,000
Elkton Con	1	1.73¾	1.74	1.73¾	1.74	1.73½	1.74	1.73	1.74	1.71¾	1.72½	1.70	1.71½	18,656
El Paso G.	1	.61	.61½	.60½	.60⅞	.59¾	.60	.60¼	.60½	.61⅜	.62	.62⅜	.62½	72,850
F.Rawlings	1	.15	.18	.15	.....	.15	.16	.15	.15¾	.15	.15½	.15	.....	1,653
Findley	1	.08⅜	.09	.07¾	.08¾	.08	.08¾	.....	.08	.....	.09	.07½	.08	8,000
Gold Dollar	1	.18⅝	.18¾	.18½	.18⅝	.18	.18¾	.18¼	.18⅝	.17½	.18⅞	.17½	.18⅝	44,000
Golde'Cycl.	1	.60	.66	.64	.65½	.64	.66	.64½	.66	.65	.66	.65	.65	3,000
Golden Fl.	1	.37½	.40	.....	.40	.....	.40	.....	.40	.38	.40	.35	.40	.....
Gold Sov'n.	1	.03¾	.04⅜	.....	.....	.03¾	.04⅜	.03⅝	.04⅜	.03¾	.04⅜	.04	.04¼	10,000
Hayden	1	.01	.01½	.01	.01¾	.01	.01¾	.....	.....	.....	.01⅜	.01⅜	.....	.....
Ing. Con.	½	.12⅜	.13⅜	.....	.13½	.12	.13⅜	.12	.13	.12½	.13	.12⅜	.13	1,000
Ironclad	1	.05	.05⅛	.05	.05⅛	.05	.05⅛	.05	.....	.....	.05	.05⅛	.05⅛	210,257
Isabella	1	.50⅜	.50⅝	.49	.49¾	.49⅛	.49¾	.42	.42⅜	.40¾	.40¾	.41	.41¾	.....
Jack Pot	1	.37	.....	.37	.39	.36	.37	.....	.....	.34	.37	.35	.38	500
Josephine	1	.....	.....	.....	.....	.01	.01¾	.....	.....	.....	.....	.....	.....	.....
Key West	1	.....	.01⅞	.....	.....	.....	.02	.01	.01⅛	.....	.01⅜	.....	.01½	1,000
Lexington	1	.06	.06¾	.08	.06¼	.05¾	.06¼	.....	.....	.05¾	.06¼	.05¾	.06¾	7,000
Magnet R.	1	.02	.....	.02¼	.02¾	.02	.02¾	.02	.02¼	.02	.02¼	.02	.02¼	1,000
Margaret	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.01½	5,000
Margery	1	.....	.02	.....	.02	.....	.02	.....	.02	.....	.02	.03½	.03¾	.....
Midway	1	.03¾	.03⅞	.03⅜	.03¾	.03⅛	.03⅜	.03¼	.03¾	.03⅛	.03⅜	.01⅜	.02	2,000
M. J. T	1	.....	.....	.....	.02	.01¼	.02	.01¼	.02	.01¼	.01⅞	.....	.02⅛	1,000
Mobile	1	.02	.....	.....	.02⅛	.....	.02⅛	.....	.02¼	.....	.02⅛	.06½	.06¾	.....
Moll.Dwyer	1	.06⅞	.07⅛	.03¾	.06¾	.06⅜	.07⅛	.06½	.06⅝	.06¾	.06⅜	.....	.....	63,000
Mollie Gib.	1	.....	.30	.21	.....	.18	.30	.....	.30	.....	.....	.....	.....	.....
Monarch	1	.....	.04¾	.03⅝	.04⅜	.....	.04¼	.03¾	.04¼	.03¾	.04	.03⅝	.04	.....
Montreal	1	.03	.....	.....	.....	.02½	.....	.....	.....	.....	.....	.04	.04	.....
Moon-A'c'r	1	.28	.30	.....	.30	.27	.30	.26¼	.....	.26¾	.28	.27	.28	8,500
Morning S.	1	.04⅜	.04⅝	.04¼	.04⅝	.04¼	.04⅝	.04¾	.04⅝	.04⅜	.04½	.03⅝	.04½	17,000
National	1	.03⅝	.03⅝	.03½	.03⅝	.03¼	.03½	.03	.03¼	.02¾	.03	.02⅜	.03⅛	4,000
Nellie V.	1	.....	.04½	.03¾	.04½	.03⅞	.04	.03⅞	.04	.01½	.04⅜	.04	.04¼	50,000
New Haven	1	.05	.05¼	.05	.05⅛	.04⅞	.05⅛	.....	.04⅜	.03¾	.04½	.....	.....	3 000
Olive B'nch	1	.03½	.03½	.03¼	.03¾	.03⅛	.....	.03⅛	.03¼	.03⅛	.03¾	.03⅜	.03⅛	.....
Oriole	1	.02⅞	.03⅜	.....	.02⅝	.02⅜	.02⅝	.02¼	.02¾	.....	.02½	.....	.02⅝	3,000
Orphan	1	.18	.....	.19	.20¼	.....	.20	.19	.20	.....	.20	.19	.20	2,000
Pelican	1	.....	.01¼	.....	.....	.....	.....	.01	.01⅜	.....	.01⅜	.01	.....	.....
Pharmacist	1	.07¾	.08¼	.....	.....	.07¼	.07¾	.....	.07⅝	.07¾	.....	.....	.....	5,000
Pilgrim	1	.....	.....	.....	.....	.....	.....	.....	.03½	.....	.05	.04¾	.05	1,000
Pinnacle	1	.03½	.....	.03½	.....	.....	.....	.07⅜	.....	.07¼	.03½	.07½	.....	2,000
Pointer	1	.06	.07	.06	.07	.06	.07	.06⅛	.....	.05	.06⅜	.05⅞	.06	12,000
Portland	1	3.03	.....	3.00	.....	3.01	.....	3.01	3.06	3.01	.....	3.01	3.05	400
Prince Alb.	1	.04¾	.04¾	.04	.04¼	.04	.04¾	.03¾	.04	.03¾	.03¾	.03¼	.03¾	19,000
Princess	1	.....	.04⅞	.....	.04¼	.02½	.04¾	.03¾	.04	.....	.04	.03½	.04	.....
Progress	1	.....	.04½	.....	.04⅜	.04¼	.04⅝	.....	.04⅝	.....	.04½	.....	.04¼	.....
Republic	1	.....	.04½	.03¼	.04⅛	.02⅜	.03	.03¼	.03⅛	.03½	.03½	.03	.03¼	14,000
Rob't Burns	1	.02⅞	.03	.....	.03	.02½	.03	.02½	.03	.02½	.03	.02½	.03	5,000
Rose Maud	1	.05½	.05⅞	.05¾	.05⅞	.05⅜	.05⅝	.05⅜	.05¾	.05½	.05¾	.05¼	.05⅝	8,000
Rose Nicol	1	.06	.06¼	.06	.06¾	.....	.06½	.06	.06¼	.06	.06½	.06	.06¼	3,000
Silver Gold	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Uncle Sam	1	.02⅜	.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Va. M.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vindicator	1	1.15	.....	1.16	1.19	1.16	1.20	1.14¾	1.14¾	1.10	1.15½	1.11	1.13¾	7,500
Work	1	.13	.13⅝	.13	.13⅝	.13	.13¾	.12¾	.13	.12½	.12⅝	.12½	.13	4,500

†Colorado Springs Mining Stock Exchange. Total sales, 805,253 shares.

COLORADO SPRINGS. BY TELEGRAPH.

Name of Comp'y.	Par Val	Oct. 3. B	Oct. 3. A	Oct. 4. B	Oct. 4. A	Oct. 5. B	Oct. 5. A	Oct. 7. B	Oct. 7. A	Oct. 8. B	Oct. 8. A	Oct. 9. B	Oct. 9. A
Acacia	1	.15¾	.16	.15½	.16	.15½	.15	.15¾	.16⅛	.15¾	.16¼	.15¾	.16¼
Alamo	1	.13½	.14¼	.13½	.16	.13⅝	.14¼	.13½	.14¼	.13½	.14¼	.13½	.14¼
Anaconda	1	.28	.30	.28	.29½	.27	.28	.27	.28	.27	.28	.26	.27
Argentum	2	.07	.08	.08½	.10	.08	.10	.09	.10	.08¼	.09¼	.08	.09⅛
Battle Mtn	1	.17	.17½	.17	.17¾	.17	.17½	.17	.17⅝	.17	.18	.17	.18
Butterfly Terrible	1	.30	.35	.30	.35	.30	.35	.30	.35	.30	.35	.30	.35
Cripple Creek Con.	1	.07¾	.08	.08¼	.09½	.07½	.08¼	.07½	.08¼	.07½	.07⅝	.07	.....
Doctor Jack Pot	1	.54½	.55	.55	.53¾	.52½	.53¼	.53½	.54	.54	.54¾	.....	.....
El Paso	1	.61¾	.62	.60½	.60¾	.62⅜	.62½	.64¼	.64⅜	.64⅞	.65	.64⅞	.65
Elkton Con	1	1.73	1.74	1.51½	1.52½	1.70½	1.71½	1.69	1.71	1.63	1.71	1.68½	1.70
Fanny Rawlings	1	.15	.15¼	.15	.15½	.15	.18	.15½	.17	.15	.18	.15	.16⅜
Findlay	1	.07	.08	.06½	.09	.07½	.08	.06¾	.07½	.07	.08¾	.07	.07⅜
Gold Dollar	1	.18¾	.18⅜	.13½	.18¾	.18¾	.18⅜	.18¼	.18⅜	.18¾	.18⅜	.17⅞	.18
Gold King	1	.....	.....	.81	.90	.85	.96	.90	.96	.85	.90	.85	.90
Golden Cycle	1	.65	.66	.64½	.66	.65	.66	.64½	.65½	.64½	.66	.64½	.65
Golden Fleece	1	.30	.40	.38	.40	.35	.40	.37½	.40	.37	.40	.35	.40
Hart	1	.07	.08½	.08	.08½	.08	.08¾	.08	.08½	.07	.07½	.07¼	.07⅜
Ingham Con	1	.12	.13	.12¼	.13	.12¾	.13	.12	.14	.12	.13	.10	.13
Isabella	1	.42	.42⅝	.40½	.40¾	.41	.41¼	.40¾	.40¾	.40¾	.40⅞	.40½	.40⅝
Jack Pot	1	.35	.38	.34	.37	.35	.40	.35	.37	.35	.37	.36½	.38
Keystone	1	.08	.08¼	.07	.08	.08	.08½	.07	.09	.08¼	.09	.07¾	.08¾
Last Dollar	1	.60	.63	.60¼	.62	.60¾	.62	.60¼	.62	.61	.63½	.60	.63
Lexington	1	.05½	.06	.05¾	.06¼	.05¾	.06½	.06	.06¼	.06½	.06½	.06¼	.06½
Mollie Gibson	1	.23	.30	.24	.27	.22	.25	.22	.28	.21	.26	.22	.26
Moon Anchor	1	.26¼	.28	.26½	.28	.27	.28	.27	.30	.27	.28	.27	.29¼
Nugget	1	.15	.17	.15	.16	.14¾	.14⅜	.13	.16	.13½	.17	.15½	.17
Orphan	1	.18¼	.20	.19	.20	.19	.20	.19	.20	.19½	.20¼	.19½	.20⅛
Pharmacist	1	.07¼	.07¼	.02½	.08	.07	.07⅜	.06⅜	.07¼	.07¼	.07⅜	.07¼	.07⅝
Pinnacle	1	.07⅜	.08	.07⅛	.08¼	.07⅜	.08¼	.07⅛	.08⅛	.07⅜	.08¼	.07⅜	.08⅜
Portland	1	3.01	3.06	3.01	3.05	3.01	3.05	3.01	3.03	3.05	3.05	3.00	3.02
Vindicator Con	1	1.14⅜	1.14¾	1.10	1.15⅜	1.11	1.13½	1.10	1.13	1.06	1.15⅜	1.09	1.13⅜
Work	1	.12⅝	.13	.12¼	.12⅝	.12⅜	.13½	.12⅜	.13	.13⅝	.13⅜	.12½	.12¾

MONTREAL, CANADA.

Oct. 8.

Name of Company.	Par val.	H.	L.	Sales.	Name of Company.	Par val.	H.	L.	Sales.
Big Three	$1	.01½	.01	.....	Montreal-London	0.24	.02	.01⅞	1,000
California	1	.06½	.04	.....	Nat'l Salt, com	.....	.....	.....	.....
Can. Gold Fields	0.10	.05¾	.03	500	" " pf	.....	.....	.....	.....
Deer Trail Con	1	.03	.02	1,000	North Star	.....	.50	.27	2,000
Evening Star	1	.04	.02	1,000	Payne	1	.25	.17½	.....
Golden Star	1	.06½	.01½	.....	Rambler-Cariboo	1	.35	.46	.....
Gold Hills Dev.	1	.01½	.01	.....	Republic Con	1	.03	.02½	2,500
Knob Hill	1	.35	.40	.....	Slocan-Sovereign	1	.02	.01	2,000
Monte Christo	1	.02¾	.01	1,000	Virtue	1	.23½	.19	7,500
Montreal G. F	1	.02⅜	.01	.....	War Eagle	1	.20	.10	6,500

LONDON.

Sept. 28.

Name of Company.	Country.	Authorized capital.	Par value.	Last dividend. Amt.	Last dividend. Date.	Quotations. Buyers.	Quotations. Sellers.
American:			£ s. d.	s.d.		£ s. d.	£ s. d.
Alaska Goldfields, g	Alaska	£300,000	1 0 0	2 3	Jan., 1901	10 0	15 0
Alaska-Treadwell, g	"	1,000,006	5 0 0	1 6	July, 1901	4 10 0	4 15 0
Anaconda, c., s	Montana	6,000,000	5 0 0	8 2	" "	7 8 9	7 11 3
Copiapo, c	Chile	200,000	2 0 0	1 6	July, 1900	2 10 0	2 15 0
De Lamar, g., s	Idaho	400,900	1 0 0	1 0	May, 1901	3 9	5 0
El Oro, g	Mexico	1 000,000	1 0 0	1 3	July 1901	1 6 3	1 8 9
Enterprise, g	British Col	200,000	1 0 0	.....	.....	5 0	10 0
Frontino & Bolivia, g	Colombia	140,000	1 0 0	3 0	July, 1901	1 0 0	1 2 6
Hall Mg. & Sm., c., s	British Col	325,000	1 0 0	.....	.....	7 6	8 6
Le Roi, g	" "	1,000,000	5 0 0	5 0	Nov., 1899	7 7 6	7 12 6
Le Roi No. 2, g	" "	120,000	5 0 0	3 0	July, 1901	3 7 6	3 10 0
Lillie, g	Colorado	250,000	1 0 0	2½	Apr., 1900	1 3	3 9
Montana, g., s	Montana	660,000	1 0 0	6	Apr., 1899	3 3	3 19
Mountain Copper	California	1,250,000	5 0 0	5 0	Oct., 1901	4 2 6	4 7 6
Stratton's Independence	Colorado	1,100,000	1 0 0	1 0	July 1901	1 2 6	1 5 0
St. John del Rey, g	Brazil	600,000	1 0 0	1 0	June, 1901	1 0 6	1 1 6
Utah Con.,g.(Highl'nd Boy)	Utah	800,000	1 0 0	5 0	May, 1901	4 15 0	5 5 0
Velvet, g	British Col'mbia	100,000	1 0 0	.....	.....	15 0	1 0 0
Ymir, g	British Col'mbia	200,000	1 0 0	1 0	July, 1901	2 1 3	2 2 9
European:							
Linares, l	Spain	45,000	3 0 0	7 0	Mar., 1901	4 0 0	5 0 0
Mason & Barry, c., sul	Portugal	420,000	1 0 0	12 6	May, "	3 7 6	3 10 0
Rio Tinto, c	Spain	1,625,000	5 0 0	£2 5s	May, 1901	4 5 0	4 7 6
" " pref	"	1,625,000	5 0 0	5s	" "	6 2 6	6 7 6
Tharsis, c	"	1,250,000	2 0 0	12 0	May, 1900	6 7 6	6 12 6
Australia and N. Zeal'd.							
Assoc. Gold Mines	W. Australia	500,000	1 0 0	1 6	Jan., 1900	2 8 9	2 11 3
Broken Hill Prop., s	N. S. Wales	384,000	8 0	1 0	May, 1901	1 18 9	1 19 9
Great Boulder Prop	W. Australia	175,000	2 0	6	Sept., 1901	18 9	19 3
Hannan's Brownhill, g	"	140,000	1 0 0	7 6	Oct., 1900	8 18 9	4 1 3
Ivanhoe Gold Corp	"	1,000,000	5 0 0	4 0	July, 1901	8 15 0	8 17 6
Kalgurlie g	"	120,000	1 0 0	rts.	Oct., 1899	3 7 6	3 10 0
Lake View Consols, g	"	250,000	1 0 0	5 0	July, 1901	8 7 3	8 10 0
Mt. Lyell M. & R., l., c	Tasmania	900,000	3 0 0	2 6	Oct., 1901	4 6 3	4 8 9
Mt. Morgan, g	Queensland	1,000,000	1 0 0	6	Sept., 1901	4 12 6	4 15 0
Waihi g	New Zealand	330,000	1 0 0	2 6	Sept., 1901	5 13 9	5 16 3
Indian:							
Champion Reef, g	Colar Fields	220,000	10 0	4 0	Sept., 1901	5 10 0	5 12 6
Mysore Gold	"	250,300	10 0	4 0	July, 1901	5 16 3	5 18 9
Nundyroog, g	"	242,000	10 0	1 3	July, 1901	2 0 0	2 2 6
Ooregum, g	"	290,000	10 0	.....	.....	2 10 0	2 12 6
" pref. g	"	240,000	10 0	.....	.....	3 1 3	3 3 9
African:							
British S. Africa, chartered	So. Africa	5,000,000	1 0 0	rts.	May, 1899	3 0 0	3 1 3
Cape Copper, c	"	600,000	1 0 0	5 0	July, 1901	4 15 0	5 0 0
" pref	"	150,000	2 0 0	5 0	" "	4 18 9	5 3 0
City & Suburban (New), g	Transvaal	1,360,000	4 0 0	8 0	Aug., 1899	5 15 0	6 0 0
Con. Deep Level, g		200,000	1 0 0	.....	.....	1 0 0	1 5 0
Crown Reef, g	"	120,000	1 0 0	18 0	Nov., 1899	14 7 6	14 12 6
De Beers Con., d	Cape Colony	3,950,000	5 0 0	£1	Mar., 1901	36 3 9	36 6 3
Ferreira, g	Transvaal	90,000	1 0 0	30 0	Aug., 1899	19 15 0	20 5 0
Geidenhuis Deep, g	"	350,000	1 0 0	8 0	" "	10 10 0	10 15 0
Geidenhuis Est., g	"	200,000	1 0 0	10 0	" "	6 2 6	6 5 0
Henry Nourse, g	"	125,000	1 0 0	10 0	Aug., 1899	7 17 6	8 2 6
Jagersfontein, d	Orange Fr. St	1,000,000	5 0 0	6 0	Dec., 1900	19 0 0	19 5 0
Johannesburg Con. Invet	So. Africa	2,750,000	1 0 0	2 0	Aug., 1899	2 1 3	2 3 9
Jubilee, g	Transvaal	50,000	1 0 0	5 0	Aug., 1899	5 12 6	5 17 6
Langlaagte Estate, g	"	470,000	1 0 0	3 0	Sept., 1899	3 7 6	3 10 0
May Con., g	"	200,000	1 0 0	6 0	Aug., 1899	4 1 0	4 3 9
Meyer & Charlton, g	"	100,000	1 0 0	8 0	July 1899	5 5 0	5 10 0
Namaqua, c	Cape Colony	200,000	2 0 0	8 0	June, 1900	4 0 0	4 5 0
Primrose (New), g	Transvaal	340,000	1 0 0	6 0	Aug., 1899	4 1 3	4 3 9
Rand Mines, g	So. Africa	490,000	1 0 0	15 0	" "	41 3 9	41 6 3
Robinson, g	Transvaal	2,750,000	5 0 0	8 0	.....	9 11 3	9 13 9
Sheba, g	"	1,100,000	1 0 0	0 6	July, 1898	18 9	1 0 0
Sim. & Jack Prop., g	"	5,000,000	5 0 0	4 0	July, 1899	6 0 0	6 2 6
Wolhuter, g	"	850,000	4 0 0	2 0	Feb., 1899	4 2 6	4 7 6

c.—Copper. d.—Diamonds. g—Gold. l.—Lead. s.—Silver.

PARIS

Sept. 19.

Name of Company.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices. Opening.	Prices. Closing
			Francs.	Fr.	Fr.	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs	27,000,000	2,000	85.00	1,780.00	1,760.00
" " Firminy	"	" "	8,000,000	500	20.00	2,960.00	2,850.00
" " Huta-Bank	Russia	Iron & steel	.....	500	.....	3,500.00	3,200.00
" " la Marine	France	Steel mfrs	20,000,000	500	65.00	1,450.00	1,450.00
Anzin	"	Coal	.....	.....	320.00	5,675.00	5,525.00
Boleo	Lower Cal	Copper	.....	500	176.00	2,240.00	2,205.00
Briansk	Russia	Coal & iron	.....	500	.....	534 00	530.00
Champ d'Or	S. Africa	Gold	3,375,000	25	3.75	29.00	30.00
Courrieres	France	Coal	600,000	300	90.00	2,445.00	2,375.00
Dombrowa	Russia	"	.....	500	75.00	990.00	945.00
Dourges	France	Coal	12,000,000	500	700.00	24,700.00	24,700.00
Dynamite Centrale		Explosives	.....	500	19.00	554.00	540.00
Escombrera-Bleyberg	Spain	Lead	.....	500	50.00	794.00	775.00
Fraser River	Brit. Col'mb.	Gold	250,000	25	.....	6.25	5.50
Huanchaca	Bolivia	Silver	40,000,000	125	5.00	95.00	89.75
Laurium	Greece	Zinc & lead	16,300,000	500	25.00	525.00	525.00
Malfidano	Italy	Zinc	12,500,000	500	12.50	425.00	355.00
Metaux, Cie. Fran. de	France	Metal d'iers	25,000,000	500	22.50	470.00	472.00
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	85.00	875.00	866.00
Napthe Baku	Russia	Petroleum	.....	.....	.....	360.00	385.00
Napthe Nobel	"	"	.....	.....	.....	470.00	470.00
" " parts	"	"	.....	.....	.....	9,350.00	9,350.00
Nickel	N. Caled'nia	Nickel	10,000,000	250	20.00	530.00	533.00
Penarroya	Spain	Coal etc	.....	500	55.00	1,020.00	1,075.00
Rebecca	Colo'do, U.S.	Gold	5,000,000	25	.....	1.25	1.25
Salines de l'Est	France	Salt	.....	500	6.00	250.00	240.50
Salines du Midi	"	"	.....	500	40.00	904.00	904.00
Vielle Montagne	Belgium	Zinc	9 000,000	80	30.00	605.00	605.00

MEXICO.

Oct. 5.

Name of Company.	Shares.	Last div'd.	Prices. Op'g.	Prices. Cl'g.	Name of Company.	Shares.	Last div'd	Prices. Op'g.	Prices. Cl'g.
Durango:					Hidalgo:				
Capuzaya Guan	2,400	.....	$10	$15	Soledad	960	$5.00	$290	$285
Restauradora Guan.	10,000	.....	10	10	Sorpresa	960	5.00	260	260
Guanajuato:					Union Hacienda	2,000	5.00	300	170
Angustias	2,400	$5.00	110	105	Mexico:				
Cinco Senores	2,000	15.00	400	300	Coronas	500	.....	45	45
Guadalupe Hacie'a.	10,000	3.00	205	210	Esperanza y An	3,000	10.00	809	800
Hidalgo:					Michoacan:				
Amistad y Concord.	9,600	3.65	44	45	Luz de Borda	4,000	.....	23	20
Arevalo	730	.....	200	90	S. Luis Potosi:				
Bartolome de Med	2,000	2.00	45	45	Concep. aviad	2,400	.....	135	150
Carmen	1,100	7.75	130	130	Zacatecas:				
Luz Ca Maravillas	1,100	.....	80	80	Asturiana	2,500	10.00	85	80
Pabellon	800	27.89	10	15	C'delar de Pinos	2,500	.....	340	430
Real del Monte	2,554	10.00	850	1,000	Palma de Somb	2,400	.....	30	30
San Francisco Hc	6,000	1.00	80	60					